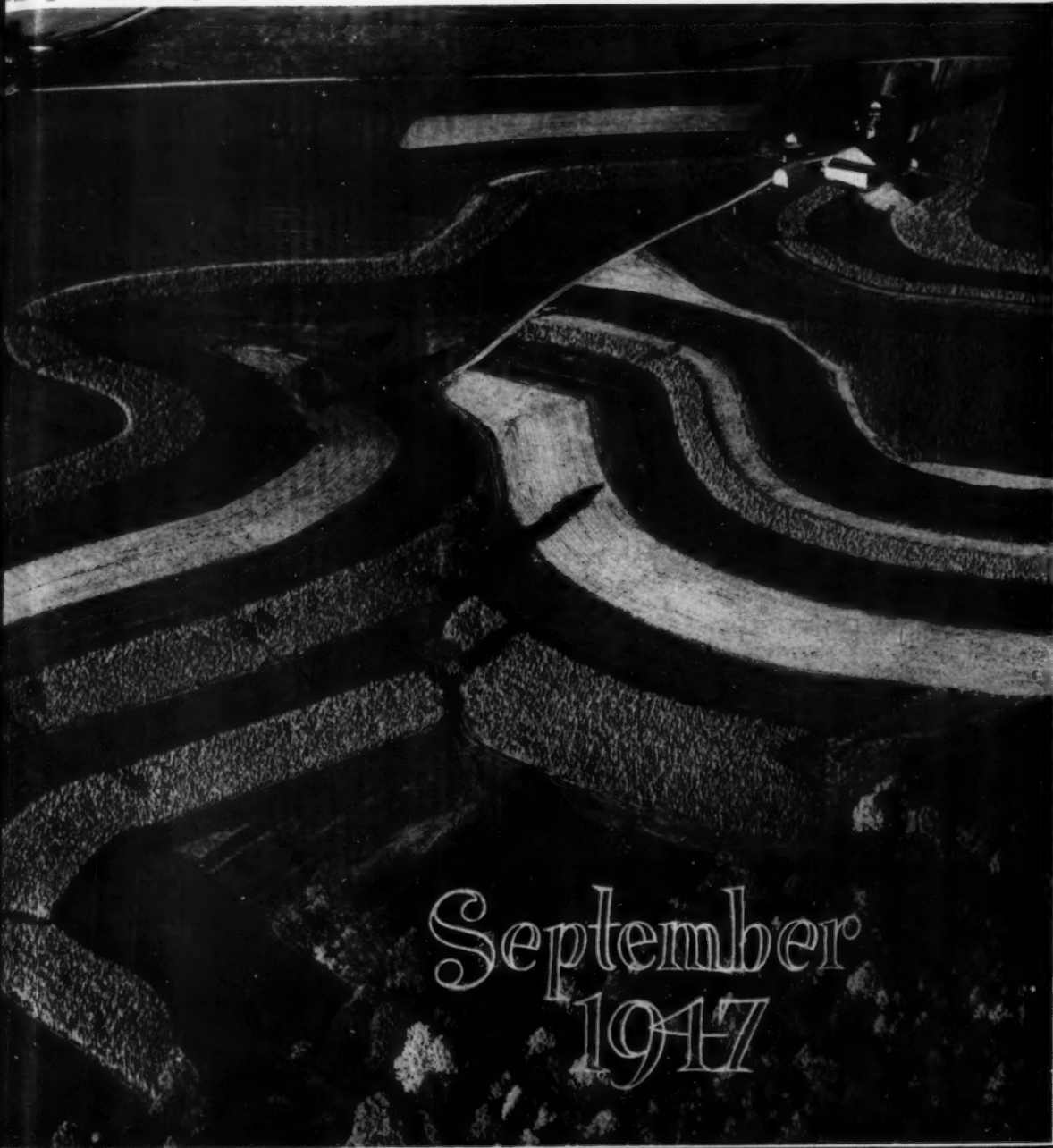


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WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

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HAPPY HIGHWAY!—The Melbourne Iowa, Community Club is cooperating with the Marshall County Soil Conservation District this year in an effort to get farmers along State Highway 64 to apply soil conservation to the land. Highway 64 was selected by the district commissioners because they felt that most of the problems found in the district existed along that route.

At the request of the district, the club, which has been active for 27 years and has a membership of 210 in a town of about 500 people, appointed an agricultural committee to work with the district commissioners, the county extension director and the Soil Conservation Service.

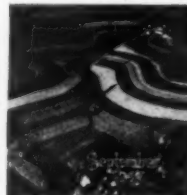
A list of 41 persons owning land along the highway was divided among five 2-man teams. The teams included three district commissioners, the county extension director and the district conservationist. Each of these men was teamed with a member of the Community Club. All owners along the highway were interviewed. As a result, 39 of the 41 land owners and operators signed requests for assistance in planning farms for soil conservation.

The entire group of farmers and land owners was invited to a public dinner and program sponsored by the Community Club. After the dinner the applicants for assistance were called together to hear a discussion of land capabilities, the effectiveness of different kinds of soil conservation practices, information on rotations and soil treatments, and a discussion of complete farm planning. Afterward, the 30 farmers were divided into 4 groups and 4 layout demonstrations were planned. Some of the work to be done includes strip cropping, terracing, waterway, gully control and pasture renovation.

Radio Station WHO at Des Moines and local newspapers have given the project considerable publicity.

—R. H. MUSSER.

THE COVER.—George Lowary's arresting picture dramatizes the soil conservation story as seen in the vicinity of Lancaster, Pa. This is one of the Nation's most celebrated farming areas—but all agriculture looks and is better as the obsolete pattern is replaced by one featuring alternating contour strips of cultivated and close-growing crops.



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What to do about **CRAYFISH**



By Verne E. Davison

CRAYFISH (or "crawfish," if you prefer) for years have taken much of the profit out of farming for many families on the prairie soils of Mississippi and Alabama. They feed mostly at night, when rains and heavy dews keep their moisture-needing bodies from drying out. The prairie crayfish (*Cambarus hagenianus*) live in burrows, each hole a veritable well in which they keep their bodies immersed. Sometimes the hole stands full of water. Or the crayfish may find water 10 feet or more below the surface in times of drouth. Their food is organic matter, almost anything. But young cotton, or corn, or oats, or grass is crayfish food which farmers can't spare.

A crayfish burrow per square foot of land, more than 40,000 to the acre, has been counted. Five to ten thousand holes, 1 to the square yard, are not uncommon. To each burrow an average of 5 or 6 lusty lobster-like animals may be found, according to Dr. Clay Lyle, Mississippi State Entomologist. In a single night—warm and rainy—the thousands of greedy claws can reach out and snip a tender new crop down to the bare soil. Sometimes the weather favors the cotton farmer, staying dry until the cotton gets too tough for the crayfish to cut. Most years, however, farmers plant parts of their cotton and corn fields 2 or 3 times before the weather and the crayfish permit a satisfactory stand. Less spectacular but equally important is the damage to oats in winter, and to pasture and hay in summer.

Summing it up, K. P. Gatchell, Soil Conservation Service technician, Columbus, Miss., said, "I have no idea how many farmers have gone broke and lost their land because of crayfish."

S. A. Robert, agricultural agent for a railroad which hauls agricultural products from the crayfish lands, carried on a vigorous campaign to get something done to control the arch pest. He called on the agricultural experiment stations, the Fish and Wildlife Service, and other bureaus for help. He wrote to Dr. H. H. Bennett, chief of the Soil Conservation Service. He argued, "Someone ought to learn how to control these destructive, aquatic land marauders."



NOTE.—The author is Chief, regional biology division, Soil Conservation Service, Spartanburg, S. C.

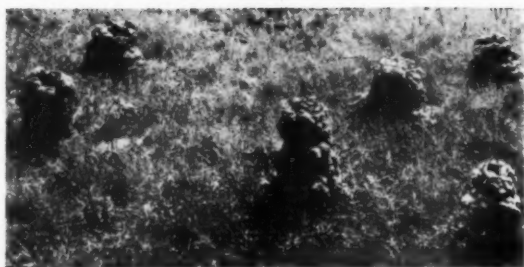
Allison Hardy, chairman of the commissioners of the Lowndes County Soil Conservation District, always asked at district meetings. "Why can't we do something about crayfish?" He knew prairie-soil farmers could not control erosion where crayfish cut the vegetation and buried it far below the force of the battering raindrops. The soil thus exposed was carried away in every rain to the Tombigbee River and its tributaries. "Crayfish are the worst pest of such soil-conserving crops as oats and hay, legumes and grass. It's the worst pest of cotton and corn. It's a mean problem in soil conservation," it was generally agreed.

There is a method of killing crayfish, but farmers find it difficult. Crayfish are readily killed by chemicals placed in the water in the burrows. Their tender bodies cannot withstand the poisonous effect of a drop or so of turpentine, or creosote, or of numerous other things. So the treatment was developed to put a little killing agent into the water of the thousands of little wells.

But Robert and Hardy, and Soil Conservation Service technicians assigned to the district, agreed with the farmer opinion that the method was too laborious. They set out to find something simpler, more practicable. Robert's railroad provided some funds and materials. The district commissioners insisted that technicians help them find ways to control crayfish. A plan of attack was agreed upon. At odd times technicians Gatchell, Morris, and Williams tried a number of things on small areas of heavily infested fields, such as tung meal, castor bean meal, cyanamid, heavy applications of barnyard manure, and residue mulches with varying degrees of success.

Later DDT, which was suggested as being deadly to crayfish, was tried by individual hole treatment. It proved to be successful. It was then sprayed on cottonseed and the seed scattered on top of the soil, as a poison, after Ezell Orr, Negro farmer remarked, "Crayfish likes cottonseed better than anything." He was also supported by William Sanders, another Negro farmer who stated, "Crayfish will take every cottonseed you fail to cover when you plant."

The technicians figured on the crayfish poisoning their own water. They did just that. They found that a single cotton seed treated with a solution containing $2\frac{1}{2}$ percent DDT would kill a crayfish in a few hours, merely by the poison being dissolved into the water.



Crayfish mounds are familiar chimneys on the prairie landscape. Combines and mowing machines find operation difficult because of clogging of cutter bars.

I saw dead crayfish on fields that had been poisoned with a bushel and a half per acre of cottonseed treated with DDT. I helped count the dead animals on land where ground-up corncobs (DDT treated) had been scattered at the rate of 100 pounds per acre. I saw a field of oats. Half of it was almost free of crayfish, killed a year earlier by Gatchell on his farm under the new control. The other half of the oats, virtually destroyed, had been poisoned 3 weeks before I inspected it. Whitened carcasses of dead crayfish testified silently to the effectiveness of the Lowndes County Soil Conservation District's new soil conservation practice. Many of the crayfish die on the land. Probably just as many others succumb in their burrows. We saw them dying at the entrances.

Dan Williams, district conservationist, explained other details: "The poisoned bait cost nearly \$2 for enough to cover 1 acre. That's less than the cost of a bushel of seed for a second planting. We have been successful with dried sweetpotatoes, silage, and other baits, but corncobs or cottonseed have worked best. Farmers will save their cobs this year. There will be plenty of cheap crayfish bait in 1948. Farmers will treat at least 1,000 acres of crayfish-infested lands this year."

The blackbelt includes good soils. Crayfish live in all of them—Catalpa, Houston, Hunt, Sumter, Vaiden, Trinity, Kaufman, and the rest. Hardly a field of these good prairie soils is entirely free of crayfish.

"We felt it didn't do much good," Dan continued, "to help a farmer plan his crop rotations and better pastures when we all know the crayfish would damage the plants so much. We couldn't get help from anywhere, it seemed, so we did the best we could ourselves."

"Poisoning crayfish with DDT is new. And it's practical."

A farmer can spread the bait evenly over the field in any one of a number of ways. A home-made lime spreader works satisfactorily. Three or four hands can cover an acre in 15 or 20 minutes from a wagon. A cotton planter or drill can be used. Just get some seed or ground cobs on every square yard of the field and you'll get a good kill.

Ideal poisoning time is warm, rainy weather. A farmer can't always wait on or anticipate the temperature and rain. So they treat in April, May or June for spring work—October, November or December on oats land. A second treatment may be necessary. A third coverage several weeks later, just poisoning around scattered live holes, may sometimes be needed to finish the job.

How often a piece of land will need treatment is still a guess. A complete kill is not necessary, perhaps impossible. We're uncertain as to that. Crayfish reproduce very slowly, and move into new territory just as slowly.

Technician Gatchell and his colleagues killed crayfish in January and February. But it isn't

a good time to get high kills. Rains make the bait ineffective in 4 to 6 weeks. Heavy rains even wash the bait away. But prairie farmers now have assurance that soil conservation and higher profits can be enjoyed, for they won't be "feedin' so darned many greedy pests" in future years. It's a good example of how local people can take care of a local problem.

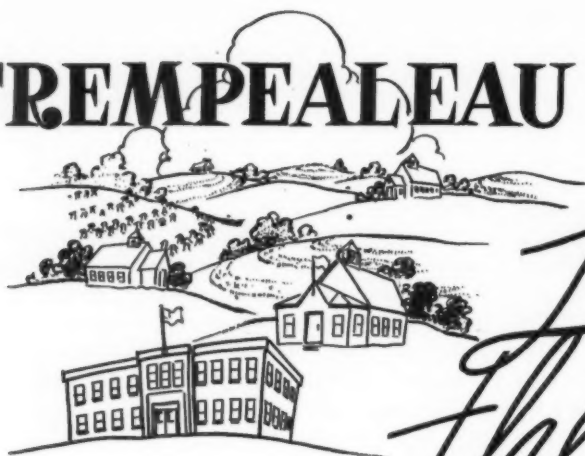
The Mississippi Agricultural Experiment Station at Starkville is working on various refinements and measuring the results carefully. The Extension Service is putting on demonstrations of control. AAA payments of \$1.40 per acre treatment (1 limit 2 treatments) were approved locally in several counties.

The Government of India desires to obtain the services, on a three-year contract, of a team consisting of an experienced engineer, agronomist, and soil scientist of P-2, P-3, or P-4 grades. Good salaries and travel expenses. Write William X. Hull, Foreign Liaison Representative, Soil Conservation Service, Washington 25, D. C.



Whitening skeletons of crayfish poisoned by DDT. Note the new growths of grasses and weeds coming in to protect the soil.

TREMPEALEAU SCHOOLS



*Look at
The Land*

By Jack P. Dundas

IF TREMPEALEAU County has lost 6 inches of topsoil in the past 60 years and this is one-half of its original layer, how much topsoil will our farms have in the year 2,000? This question and many others relating to soil were considered by every seventh and eighth grade rural school pupil in Trempealeau County, Wis., during 6 weeks of 1946.

Because many young people do not settle on farms or do not go on to high school, County Superintendent of Schools Dorris Sander was prompted to set up a teaching unit on conservation in the rural schools. She asked and received my own assistance, as the Soil Conservation Service farm planner, and that of Arnold Wochos, county agent.

A soil "clinic" was held with groups of 8 to 10 rural school teachers. The meetings started at 2 o'clock in the afternoon and ended at 8 in the evening, with "pot luck" supper at 6. Subject matter contained in the Wisconsin Extension Bulletin, "Save our Soil", was discussed by Gaylord Jacobson, Ken Nehring and me of the Soil Conservation Service Staff, and by County Agent Wochos. The latter's assistant, T. C. Main, (now the county agent) reviewed subject matter in this bulletin.

Other materials used at these meetings included profiles of local soils—both eroded and non-eroded—grass root and fertilizer samples, local soil conservation slides and sound movies. County

Superintendent Sander developed plans to have the conservation unit correlated with other classes. As a result, the pupils wrote themes, plays, poems, and songs on soil conservation as English assignments. In history and reading, stories were studied about the soil conservation work of early prominent Americans. Words concerning soil conservation were used for spelling lessons. In art classes, the students made posters, charts, and graphs on this subject. Arithmetic problems in applying amount of the various fertilizer mixtures were devised by teachers and pupils. News stories and pictures on soil conservation were used for scrap books. Short field trips were taken by the teacher and pupils to observe the subject matter studied.

A record sheet was supplied each teacher for keeping track of the activities carried on during the course. This was useful in connection with



Streambank erosion control and wildlife benefits under discussion.

NOTE.—The author is work unit conservationist, Soil Conservation Service, Whitehall, Wis.

awarding prizes to schools doing outstanding work.

At the conclusion of the study, 40 schools held community club meetings at their schoolhouses, drawing an aggregate attendance of 2,600. Everyone was invited. The programs included songs, stories, essays, poems, and plays on the subject of soil conservation. Representatives of the Soil Conservation Service attended the meetings, showed slides or movies, and gave short talks.

As examples of what the science classes did: The Ettrick State Grade School took a field trip to study floodwater, taking samples so that observations could be made on the amount of topsoil carried. The Sunnyslope School yard was endangered by a gully that had started in a nearby field. The teacher called upon Kenneth Nehring, of the soil conservation district, to assist in planning control measures. On Arbor Day the children worked on the ditch and planted trees on the school grounds.

To culminate this work, a series of 8 field trips was held early in May. A total of 975 children and adults visited farms cooperating with the soil conservation district, and saw samples of the things that had been studied. Holes were dug in the crop fields and in adjacent noneroded woodland areas to observe the variation in the depth and texture of topsoil.



Demonstrating tree-planting technique and care of planting stock.

They walked up and down slopes and on the contour to observe the ease of "working on the level". Strip cropping, alfalfa-brome grass, tree planting, pasture renovation, streambank erosion control and diversion terraces were noted. One unusual sight encountered was a large masonry flume that was completed in 1910 on the William Raichle farm.

Distribution of prizes marked the end of the project. The Trempealeau County Bankers' As-

sociation donated \$100. The winning school was awarded a 3-year traveling plaque. Four schools doing excellent work received framed soil conservation pictures. Ten schools doing very good work received certificates of merit. Nature books were presented as prizes for the best individual work. Every seventh and eighth grader participating received a "Save Our Soil" pin which made him a member of the Trempealeau County Soil Conservation Club.

This year a similar program has been projected on the subject, "Plant and Animal Life with Relation to Soil Conservation." The unit is divided into wildlife planting, birds, animals, trees, fish, snakes and frogs, insects, weeds, and school ground planting and beautification. Outlines for these subjects were prepared by the three offices. Prizes have been donated by the eight sportsmen's clubs in the county.



Pupils grade own quiz papers at end of field trip.

These two courses will be taught alternately every 2 years in all rural schools in the county. Each eighth-grade graduate will have received basic training in soil and soil conservation and its relation to plant and animal life. These future farmers will be better conservation farmers.

Unquestionably, this school undertaking has played a big part in the increased interest in conservation farming in the soil conservation district. In 1946 contour strip cropping increased 105 percent on noncooperating farms and 84 percent on farms of district cooperators over 1945. Many of the farms included in the 105 percent have now become cooperators with the district and are following complete plans for soil and water conservation. Although the youngsters will eventually themselves be responsible for this job, part of the pay-off is already being realized in increased application of conservation to the farms of parents and other adults.



Here is land being cleared the old way. Standing timber is cut and burned, instead of being harvested as poles, posts, and firewood. This way, it's all expense.

New Lands Opened in Green Mountain District

By A. E. McClymonds

Now and then soil conservation goes beyond its usual work of checking erosion on lands already used for farming or ranching, and actually assists in developing new lands. Some of these lands are being drained. Some are being brought under irrigation. Some are being cleared.

The Green Mountain Soil Conservation District in western Montana is one of these places. It lies in the heavily wooded, narrow, mountainous valley of Clark's Fork River, where men have settled to carve out homes from the wilderness. It extends from near the town of Thompson Falls westward to the Idaho line.

Green Mountain's farmers had hardly made a good start at clearing before they organized their soil conservation district. Now, land is classified as to its capabilities before clearing plans are made. The tragic mistakes of an earlier day are being avoided. In this the farmers have the help

NOTE.—The author is regional conservator, Soil Conservation Service, Lincoln, Nebr.

of Soil Conservation Service technicians, who also lay out the irrigation systems and help with conservation plans.

Methods are being used which lessen costs and remove many of the backaches from the clearing job. Because district supervisors have found markets, the timber that formerly was a bar to progress is now a good source of income. This enables the farmers to spend their time on their lands, instead of seeking outside employment in order to live.

It was in 1942 that the Green Mountain District began operations. It had been organized the previous November, including at first only 117,000 acres along Swamp Creek and the Vermillion River, tributaries of the Clark's Fork. Sixty families reside there.

Since then, the district has expanded twice. It now includes 770,000 acres, 300 families. Only 98,000 acres are owned by individuals. Nearly 570,000 acres, principally steep upper mountain slopes, are federally owned and part of the Cabinet National Park. The remainder belongs to corporations, the State of Montana, and Sanders County.

The area was logged in the 1890's and partially burned over in 1910. Present timber is second-



First stage in clearing. The wood products have been harvested and the brush piled for burning. This land has been seeded to a grass-legume mixture. It will be pastured 3 years while the stumps are curing. Removal of the stumps will be accomplished with a bulldozer and dynamite.

growth pine, fir, tamarack, and some spruce and cedar which has generally reached pole or post size.

Steepness of slope alone precludes the development of farmland on all but about 100,000 acres which lie in the valley bottoms and on lower slopes. Of this, only about 35,000 acres are suitable for cultivation.

While some settlement had occurred earlier, 82 percent of the present residents came to the area after 1930, most of them during the period between 1935 to 1937.

Most settlers were victims of drought elsewhere or of unemployment during the depression. They generally lacked capital, and the need for finding outside employment left them little time for clear-



Second stage. The stumps have been removed and piled for burning, along with brush which has grown during the period the stumps were curing.

ing. Three-fourths of the farms are 160 acres or less.

Soil conservation was not uppermost in the farmers' minds when they sought the help that led to organization of the Green Mountain District.

It was a worried group from the Swamp Creek community that called on County Agent "Rusty" Ralston one rainy day in the fall of 1940. An irrigation project which has been built to take water from Swamp Creek did not work. None was experienced in irrigation or understood the soils. Ralston started them on the way to organizing the district.

How the district idea has taken hold is indicated



Third stage. This land has just been broken with the district's heavy breaker-plow. It is now ready to be worked with regular farm equipment.

by the fact that in the 4 years since operations started, nearly three-fourths of the farmers have asked the district supervisors for aid. The technicians have helped more than 75 work out farm conservation plans and are at work helping as many more. This, in addition to the technical services in putting the plans into effect on the land.

Such help is especially important because of the harsh results in clearing land that may not be suitable for cropping. Much labor and expense during several years are required. If the wrong land is cleared, the investment is largely lost and the threat of erosion is increased.



Post-treating set-up used by Adolph Olson. Since this picture was taken, the farmers in the Green Mountain Soil Conservation District have established a marketing cooperative and treating plant, and two cooperators with the district have set up a privately owned plant at Thompson Falls.

Formerly the method was to fell the standing timber and burn it, then remove the stumps. It was all expense. The present method aims at salvaging the usable wood products, a step in line with the farmers' conviction that farming and wood production should go hand in hand as a year-long enterprise.

The first step—salvaging the wood products and felling trees—is slowest because it involves principally hand labor, and the number of trees capable of yielding poles, fence posts and fuel wood is large. Some trees have even reached saw-timber size.

Ordinarily, at least 3 years should elapse between the first step and the second, which is the removal of stumps and brush. Stumps are less difficult to remove when they are rotted somewhat. In the meantime, technicians advise the planting of legume grass mixtures, which add nitrogen and organic matter to the soil, furnished grazing and help combat growth of brush.

Removal of stumps, roots, and brush has been speeded up materially through the use of equipment. First, the larger stumps are blasted to pieces small enough for a man to handle. This also frees much of the earth from the stumps. Then a crawler-type tractor, equipped with a heavy-toothed blade similar to a bulldozer, makes short work of piling material to be burned. It rips up the brush at the same time it pushes out the stumps.

Breaking the land is the third step. It is done with a small crawler-type tractor and heavy breaker plow. Most of the "blind stumps" are plowed out in this operation and the land put in shape for farm machinery.

The present equipment is loaned to the district supervisors by the Soil Conservation Service. The supervisors rent it to cooperators at an hourly rate high enough to cover operator's wages, cost of operation and maintenance, and to provide reserves so that the district can buy new equipment when this is worn out. The hourly rates seems rather high, but land clearing costs have been cut in half.

Farmers find that the wood products which are salvaged just about cover the costs of clearing. Two examples illustrate this. One man hired the work done; the other harvested the wood products himself.

M. C. Sutherland had 30 acres to clear. The stand was principally tamarack, which yielded 13 cords of fuel wood per acre. He paid a wood cut-

ter \$3.50 per cord for cutting the wood, and hauling it to Thompson Falls cost \$1.50 per cord. It brought \$7.50 a cord, which gave Sutherland a net income of \$32.50 per acre.

Other clearing costs—powder, caps and fuse, labor for blasting, rent of equipment, burning piled debris, and breaking the land—amounted to \$42 per acre. This was \$9.50 per acre more than his net income from wood, an amount which was more than covered by an AAA conservation payment of \$10 per acre.

Adolph Olson on the Vermillion river harvested the wood products himself. A native of Sweden and experienced in woods work, he came to the Clark's Fork valley about 9 years ago. The drought forced him to move from Poplar, Mont.

He bought his 200 acres about 9 years ago. Thirty acres are classed as cropland, of which 13 acres had been cleared. Some which had been cleared should have remained in trees.

Olson was the first to tackle the job of making woods products from land being cleared supply the income to enable him to stay at home. He is now clearing 17 acres of land rated as excellent for cultivation if the proper conservation practices are applied. Technicians helped him select the marketable trees. It was necessary for the supervisors to help find buyers.

He cut, treated, and sold 2,800 fence posts the first year. He also sold 12,000 board feet of mine stulls. The next year he produced 3,500 fence posts from half an acre and a goodly amount of cordwood. His production records for 1945 are not available.

"I was surprised at what I earned getting out fence posts," Olson remarked. "My income has been the best I have had since I moved here."

Olson's experience led the supervisors to help the farmers form a marketing cooperative. Since then, Sutherland and Paul Harlow, also a cooperator with the district, have opened a commercial market at Thompson Falls. They have bought a post peeler and a pole peeler, which frees the farmers of one of the most arduous tasks in post and pole production and one which can be done best at the time when crops need to be seeded.

How the woods products business has grown is shown by the figures. Only one carload of fence posts was sold in 1943, and only two in 1944. In 1945, there were 15 carloads and the sales for 1946 were more than 50 carloads. In addition, Walter

(Continued on page 46)

Decade of **PROGRESS**



By R. W. Rogers and H. C. Fletcher

SOIL and water conservation in the United States in the last 10 years has gone ahead rapidly. Today there is more real conservation being put on the land than ever before. You may have seen it taking root and spreading in your own locality.

The work of the Soil Conservation Service has been carried on under two main phases; (a) demonstrations and, more lately, (b) extensive operations in cooperation with the farmers' soil conservation districts.

Effective soil conserving practices have been developed through experimentation and actual field trials. Effective conservation treatments, not necessarily all possible treatments, are now known for most parts of the country. The Service, in cooperation with state experiment stations, has determined many of the varying needs of the highly diversified land of the country. Its research scientists are continuing to develop new and better methods of holding soil and keeping the land productive. Their work is part of the coordinated tool for soil conservation—a tool that makes use of all the available measures needed for treating the land according to needs and capability, one measure to support another.

NOTE.—The authors are Division Chief and Assistant Division Chief of the Records and Reports Division, Soil Conservation Service.

Complete soil conservation planning and land treatments have been demonstrated to thousands of farmers and ranchers, who now realize the need for and value of proper land use and protection. The necessity of protecting their land resource has become of utmost importance to them. Most farmers have experienced erosion losses and land damage. Consequently, demonstrations and personal experiences have caused millions of owners, tenants and landlords to seek technical guidance in conservation.

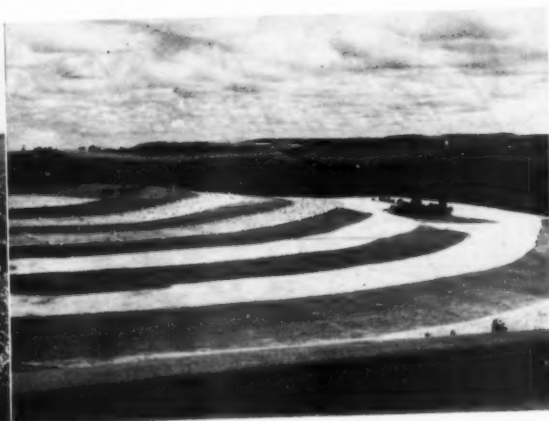
Acre by acre, field by field, and farm by farm, the Soil Conservation Service has steadily widened its scope of field operations to meet, so far as humanly possible, the growing public demand for treatment of the land according to its capability and needs.

SOIL CONSERVATION DISTRICTS

IN APRIL 1935 Congress established the Soil Conservation Service as a permanent agency of the Department of Agriculture (Public 46 of the 74th Cong., approved April 27, 1935). Shortly thereafter the President proposed the adoption of a Soil Conservation Districts Law to the Governor of each State, as a guide for democratic action. A suggestive act outlined a procedure for the organization of soil conservation districts as governmental subdivisions of the States. Enabling



Contour cultivation : 3,275,000 acres.



Strip cropping : 601,000 acres.



Cover crops : 2,370,000 acres.



Seeding range and pasture : 1,647,000 acres.



Stubble-mulch farming : 5,108,000.



Number of farm and ranch ponds : 27,480.

FIGURES SHOW 1 YEAR'S PROGRESS



Tree planting: 29,870.



Diversion channels: 3,370 miles.



Woodland improvement: 1,606,000 acres.



Farm drainage: 752,600 acres.



Terracing: 99,480 miles.



Irrigation land preparation: 135,850 acres.

legislation has now been enacted in all States and Puerto Rico, as well as the Virgin Islands, Hawaii, and Alaska. Local people quickly recognized the democratic process of self-government in the districts—with farmer control and farmer decisions “at the grass roots.” By the end of 1937, 22 States had passed legislation providing for the organization of districts. The first was the Brown Creek District in North Carolina, set up on August 4, 1937. In the first year 13 districts comprising 8,000,000 acres were organized. Since then interest in districts has continued to grow. Nearly three-fourths of the Nation's farms are now included.

Growth of districts, by calendar years, to December 31, 1946, is shown in the following summary:

Calendar years	Districts organized		Total area in districts		Farms and ranches, ¹ cumulative total
	Annually	Cumulative	New districts and additions	Cumulative total	
	Number	Number	Acres	Acres	Number
1937.....	13	13	8,002,022	8,002,022
1938.....	96	109	51,037,951	59,039,973
1939.....	108	217	60,450,905	119,490,878
1940.....	212	429	147,584,445	267,075,323
1941.....	224	653	115,553,677	382,629,000	1,908,045
1942.....	173	826	96,500,000	479,129,000	2,197,983
1943.....	177	1,003	86,750,000	565,879,000	2,522,636
1944.....	318	1,321	109,298,084	675,177,084	3,109,536
1945.....	240	1,461	126,539,434	801,716,518	3,622,557
1946.....	294	1,755	143,216,060	944,932,578	4,183,677

¹ Based on the 1940 census of agriculture, with some local variations for districts in parts of counties, or on a watershed basis.

NOTE.—Totals at the end of each year are net, including corrections and adjustments made during the year.

The peak in organization for 1 year was reached in 1946, when 294 new districts were organized. The 294 districts comprise over 128,000,000 acres. Additions that year to 118 previously-organized districts totaled 15,000,000 more acres, making 143,216,060 acres altogether brought into districts in 1 year. Organization continues at a rate of about 20 new districts a month. This increase is expected to decline, however, as the area not in districts becomes smaller.

As of June 1, 1947, there were 1,873 conservation districts organized in the United States and Puerto Rico. They encompassed 993,000,000 acres, of which 650,000,000 acres were in farms. Districts now embrace about 65 percent of the total farm and ranch land. They include 73 percent of all the farms in this country. **THERE ARE NOW OVER ONE BILLION ACRES IN ORGANIZED SOIL CONSERVATION DISTRICTS.**

Local farmers manage district affairs. Each State also has a committee, board, or commission which is responsible, as an agency of the State, for the final determinations on district creation, and for guidance to the local districts after they are organized. The districts have their own governing bodies, selected from local leaders. At present there are over 9,000 voluntary unpaid members of district governing bodies. In addition, many neighborhood leaders give unselfishly of their time to help carry on soil and water conservation work.

On request of district governing bodies, the Department of Agriculture enters into memoranda of understanding with districts. These permit the agencies of the Department to make assistance available to districts. The Soil Conservation Service, for example, provides technical assistance for conservation planning and treatments, equipment for loan or grant, and limited materials and supplies, as available. Such assistance is needed by some 4,430,000 farmers and ranchers in organized districts.

CONSERVATION PLANNING AND TREATMENT

CONSERVATION plans for entire farms or ranches are cooperatively made and carried out by technicians of the Soil Conservation Service, working with the farmers in the districts through their agreement with the district. The farmers pay the cost. Every acre is treated according to its capability and its needs. It usually takes several years to adjust land use on a farm to the capabilities of the land and to apply all of the necessary conservation treatments. Some practices are applied each year until the plan is fully completed in accordance with the farmers' wishes and financial ability.

In 1946 Soil Conservation Service technicians assisted farmers in preparation of over 127,000 new conservation plans. These plans were for more than 33,500,000 acres, 63 percent higher than the previous year. **THIS BROUGHT THE NUMBER OF ACTIVE PLANS, IN DISTRICTS ALONE, TO 424,372, COMPRISING 116,646,256 ACRES. COMPLETE TREATMENT WAS PUT ON 19,300,000 ACRES BY FARMERS IN 1946, WITH SERVICE ASSISTANCE.** This is what the Soil Conservation Service helped districts do.

This new treatment of land for conservation was carried out as a part of individual farm plans.

Windbreak

In all, 5 have the ahead, b pected to dition, l group-en tricts to and main initial tre

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Some c conservat Conservat

Contour culti
Cover crops...
Stubble mulch
Strip cropping
Seeding range
Number of farm
Tree planting...
Woodland imp
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Diversion chan
Farm drainage
Irrigation: Lan
Improved water
Windbreak plan

Group-c adjoining soil conser sists of d special ero has been p



Windbreak planting of this sort was accomplished amounting to 6,940 acres in 1946.

In all, 57,000,000 acres in conservation districts have thus been treated as planned. Looking ahead, by 1950 at least 150,000,000 acres are expected to have received proper treatment. In addition, large areas will have been benefited by group-enterprise jobs. Responsibility of districts to farmers for guidance in reapplication and maintenance of practices becomes larger as initial treatments are finished.

Photographs of some soil and water conservation practices, showing amounts finished in 1946, are shown on pages 36 and 37. Quantities of such practices applied in 1946 were 78 percent above 1945.

Some conservation practices finished in soil conservation districts to January 1947 with Soil Conservation Service assistance are as follows:

Name of practices	Cumulative to December 31, 1946	Unit
Contour cultivation.....	11, 076, 649	Acres.
Cover crops.....	4, 285, 478	Do.
Stubble mulch farming.....	12, 912, 965	Do.
Strip cropping.....	3, 017, 038	Do.
Seeding range and pasture.....	4, 800, 671	Do.
Number of farm and ranch ponds.....	65, 769	Do.
Tree planting.....	258, 451	Do.
Woodland improvement.....	4, 917, 214	Miles.
Terracing.....	386, 024	Do.
Diversion channels.....	9, 806	Do.
Farm drainage.....	1, 362, 436	Acres.
Irrigation: Land preparation.....	276, 557	Do.
Improved water application.....	873, 039	Do.
Windbreak planting.....	34, 512	Do.

GROUP CONSERVATION JOBS

Group-enterprise work involving two or more adjoining landowners is also a vital part of the soil conservation district's job. Such work consists of drainage, irrigation, flood control, and special erosion control jobs. This kind of activity has been progressing about 3 years. Jobs planned

to the end of 1946 were to benefit 3,625,000 acres at an installation cost of about \$13,000,000.

So far 1,486 group jobs have been completed, to the benefit of more than 1,760,000 acres. Included among the finished practices are the clearing of 2,614 acres; the construction of 1,862 miles of ditches, canals and laterals; with nearly 17,000,000 cubic yards of excavation; the leveling of 7,290,000 cubic yards of spoil bank; the construction of 1,809 small structures; the laying of 401,270 linear feet of tile drain; and the laying of 62,154 feet of irrigation pipe.



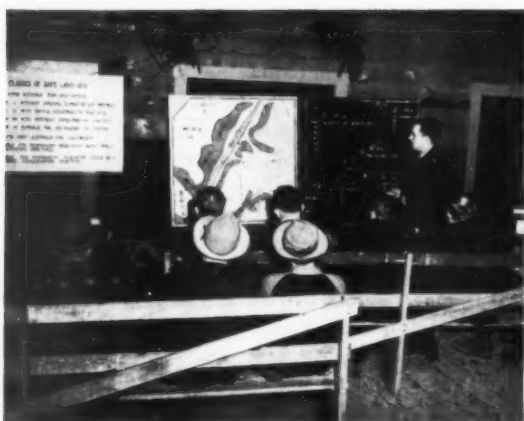
Improved water application totaled 380,660 acres for the one year of 1946.

Usually group enterprises are organized for specific purposes, and involve two or more landowners who work together in construction, operation and maintenance. Enterprises effecting several farms may overlap areas covered by individual conservation plans. Such work is often necessary before a complete job can be done on any one farm.

COOPERATIVE ACTION

Farmers, bankers, and rural organizations have long sought coordination of public assistance to farmers. They now recognize the advantages of coordinated action through the district governing body in local communities. Local district programs and work plans afford an opportunity to bring public assistance to bear for the improvement, conservation, and maintenance of agricultural lands.

Today rural people are cooperating to protect their land against erosion and misuse. They are working as individuals, and in neighborhood groups, to carry out their districts' programs.



Cooperative action for proper land use.

Such cooperation among local people, and the coordination of county, State, and Federal assistance, has proved highly effective. It is generally recognized as the most economical and effective way of getting soil and water conservation jobs accomplished.

STEWARDSHIP OF PUBLIC FUNDS

Several agencies of the Department of Agriculture work in the soil and water conservation field. Briefly some phases of the agencies' responsibilities are as follows: The Soil Conservation Service has the responsibility of providing technical and other assistance to districts. The Agricultural Conservation Programs Branch (PMA) makes payments to owners and operators for participation in the conservation program. The Farmers' Home Administration (formerly FSA) makes loans to promote conservation on tenant purchase farms, and to develop facilities for water storage and utilization. The Forest Service does conservation work on private and public lands, particularly National forests. Both the Soil Conservation Service and Forest Service make surveys and carry on works of improvement in aid of flood control. In the fiscal year 1947, appropriations to the SCS are estimated as about 12 percent of the conservation funds appropriated to the Department for use on private and public lands.

State extension services and the Federal Extension Service carry on educational work in conservation, and many other activities relating to agriculture. Many of them have worked closely with rural people in the creation of soil conservation districts.

State legislatures of 43 States have made appropriations for district work. Over \$2,000,000 of State funds were available for the biennium 1945-47. Several of the States are increasing their appropriations or allocations.

Careful stewardship of funds enables the Soil Conservation Service to get effective conservation on the land at the least expense. By cooperation with districts, the total SCS costs for complete conservation planning and treatment are \$1.50 per acre. This includes expenses for total operations, research, and administration. It covers technical services out in the fields with farmers, and some tree planting stock, as well as certain equipment not commonly available to farmers. **NO CASH PAYMENTS OF ANY KIND ARE MADE TO FARMERS OR RANCHERS BY THE SOIL CONSERVATION SERVICE.**

Owners and operators are willing to use their funds and facilities to pay their own soil conservation treatment costs. More liberal loans and credits are being made available to them. They do not expect payments in cash for the repeated practices year after year; but they do know that they can rely on additional income from conservation. They look to the districts for technical on-site assistance, guidance, and other help not otherwise available. Experience proves that this is the way to get the conservation job done, and done right, at the least public expense to the taxpayer.

CONSERVATION BENEFITS

Applied conservation pays in terms of added farm income. It helps to increase the margin between operating cost and profit. It brings about higher yields per acre. It makes possible equal or more production on less acreage. It insures a sound productive agriculture.

The benefits of soil and water conservation are becoming more and more evident. Conservation farming is spreading to neighboring farms every day. It has been proved that poor land can be improved, and good land made better, by conservation.

In 1946 the Soil Conservation Service ascertained from farmers in 25 States the effects of conservation on income. On 984 farms, with 83 percent of the needed conservation practices done, the average gross income was \$7,332; whereas 888 similar farms with only 47 percent of the work completed averaged \$5,959. The difference in income per farm for the crop year 1945 was \$1,373.

On the high-score conservation farms the average gross income was \$28.30 per acre. The farms with less conservation averaged \$23.40 per acre. This \$4.90 additional income for each acre was obtained with one-third more conservation.

OUTLOOK

The 1945 Census of Agriculture shows approximately 1,142,000,000 acres in farms and ranches in continental United States. There are about 6,000,000 farms and ranches. When all of these are considered, it is clear that the conservation job is not going fast enough yet. If further irreparable damage is to be prevented the soil and water conservation job must be speeded up.

To get and keep effective conservation on all cropland, pasture, range, and woodland, the conservation know-how must become firmly fixed in the minds of those who operate such land. Conservation education has gone a long way toward getting people to recognize erosion problems. It has introduced owners and operators to many better conservation farming methods. But this alone is not enough. Continued conservation educational activities and technical assistance out on the land will be necessary.

Devastation of land even now proceeds at a rapid rate. In some places measures must be taken immediately. In other areas it is possible although not advisable to postpone conservation work for 10 to 20 years. The remaining 460,000,000 acres of our good land must be protected before it is too late. This job can be done on time, by the farmers and ranchers themselves, with intelligent hard-driving teamwork between soil conservation districts and the assisting Federal technicians.

Real and lasting progress has been made in the last decade. The advancement in the next 5 years can far exceed the accomplishments already obtained.

Farmers who are planning to buy life insurance will find the 50-page booklet, "Life Insurance for Farm Families," recently published by the Bureau of Agricultural Economics, a useful handbook.

The section, "Planning an Insurance Program," will be of particular interest to those buying insurance for the first time. Suggestions are given as to how a farmer can select an insurance policy that will fit his needs and his pocketbook.

"Life Insurance for Farm Families" may be obtained from the Superintendent of Documents, Washington, D. C., for 15 cents.



RESOLUTION

ADOPTED BY THE ILLINOIS SYNOD OF THE UNITED LUTHERAN CHURCH OF AMERICA

Whereas the church is in a position of leadership in the community, and leads toward a richer, more abundant life, and

Whereas the basic wealth of any nation is in its topsoil and,

Whereas the conservation of soil and moisture and the maintenance and improvement of fertility is the most important agricultural problem existing today, and

Whereas the conservation of souls and the conservation of soil are inseparable, what is good for the land being good for man, and

Whereas where topsoil is eroded away and fertility is lost, people are usually poor and churches are dilapidated, and

Whereas people living on land properly taken care of are usually more healthy physically, mentally and morally, and

Whereas the church in its position of community leadership can be instrumental in informing people of the seriousness of the problem of soil, water and fertility loss, and also of remedial measures by developing a comprehensive program of conservation, by having sermons on land misuse and soil conservation, by Sunday School lessons, and by groups and individual discussions, and

Whereas an informed public is an essential step toward the establishment of soil conservation on the land, and

Whereas conservation organizations such as the United States Soil Conservation Service, Soil Conservation Districts, the Extension Service, the State Conservation Department, Friends of the Land, and other conservation organizations are willing to assist by providing literature, films, and other information to assist the church with its program.

Be it therefore resolved that the Illinois Synod of the United Lutheran Church of America include soil conservation in its church program, urging that pastors become better informed so that they may influence the possessors and tillers of land to be better stewards of the soil, and to encourage the wise use of land for ourselves and for those who follow.



A Hope for the Future

By Walter C. Lowdermilk

IT HAS BEEN given me to study the use of land in 26 countries, and in the cradles of civilization in the Far East and in the Near East. What do we find? Where man has lived the longest in organized societies, there the land is in the worst condition. What does this mean? It means that civilization is not yet a success. It means that mankind has not yet worked out a lasting adjustment to the land—a righteous adjustment to the good earth. For it is in the primeval lands of the new world that people today are enjoying the greatest abundance. As old lands were farmed out, wasted or depleted, and damaged, chiefly by soil erosion, peoples moved out to newer lands time after time. The saying "Westward the course of Empire took its way" only hides the tragic fact that man has wasted the land and has left it, worked out and washed away, for new lands to the west.

But today there are no more continents to discover, to explore and colonize, and to exploit. Mankind has now occupied all the lands of the earth, and taken them into possession. To be sure, all are neither equally stocked with people nor fully made use of. But as the public domain of the United States is closed for further homesteading, so the lands of the world are no longer open to settlement. No more free land exists. The frontier of new lands with only minor exceptions is gone and gone forever. In its place, however, is a new frontier that lies in the conservation of lands now under use. And here we have a challenge as great as the challenge of war for national defense, if we have the eyes to see what is at stake.

IN MY STUDIES of land use in old countries, I had to devise a simple method of field work to cover large areas in a short time. I had excellent cooperation of agricultural scientists of other countries. With their help I made use of the following method: We sought out fields that had been cultivated for a thousand years or more.

NOTE.—This article was developed from a paper presented by the Assistant Chief of the Soil Conservation Service at the last annual meeting of State Association of Soil Conservation District Supervisors in Huron, S. Dak.

And then I studied this field and that field to learn how it could have been farmed for a thousand years. If a field had been farmed for a thousand years, the prospects were that it could be farmed for another thousand years with equal care. For practical purposes, here was a measure of permanent agriculture. This evening I offer this same method to you to apply to your own farms.

May I suggest that tomorrow you lay across your fields this measuring stick of use for a thousand years? Will your present methods of farming let your field be cultivated and keep up good yields for a thousand years? This is a measure that you yourselves can apply to each of your fields on your farms.

BESIDES hunting for fields that had been cultivated a thousand years, I sought to find out why other areas of yet greater extent had been abandoned by farmers, and why agriculture had failed. In all cases the land told its own story. The record was deeply written in the land. For the most part, soil erosion had damaged and destroyed such lands—erosion and gullying on slopes and overwash and sedimentation in valleys and on alluvial plains. In some cases, soils had been washed off to bedrock over vast areas, and in their midst stood ruins of villages and towns where happy people had once lived from the bounty of these lands. Now it would not be possible to repeople these villages and towns because the soil is gone. Ruins of the land are more tragic and doleful than ruins of villages. For, if the land had not been destroyed, it would still be possible to rebuild the villages and towns and to grow food and to repeople them. But this is no longer possible.

Today we are prone to measure the fate of land solely in economic terms of present market prices. If it does not pay under present economic give and take, we look upon destruction of land with complacency. This complacency grows out of a false assumption that there is an abundance of land; that if we destroy this farm, we can go west to take up new land. But in the long history of mankind, economics is like the weather—it changes back and forth. It changes far more rapidly than climate

changes. But the changes in land that are brought on by soil erosion are not like economic changes. They are cumulative in their destruction and in the effects of eroded materials. Such changes are not reversible. It matters little what the economics were that brought on soil depletion and destruction if the land is destroyed for further growing of crops. The fact is that when soil is gone it is costly beyond reason to restore the remaining material to a state of production. Commercial economics may actually set in motion processes that cannot be reversed—may impoverish the land. Herein is an insidious hazard to our land. For under profitable business economics the land of a nation may be despoiled.

IN OUR STEWARDSHIP of land, therefore, we must look beyond commerce of today to the economics that determine the future of our people. If economics will justify nothing else than the destruction of land which is the heritage of our people, something is wrong with the economics rather than with the land. In fact, a resource may not be economically ripe for use at the present time. It should be a principle that a resource is economically ripe when its use will support its own conservation. Here we have a measuring stick to determine when resources are ready for utilization, when the law of supply and demand may be let do its good work.

This is not an academic question. It is tremendously real right now. Let us examine this matter a little further in the light of world events today. We have just gone through a tremendous effort in carrying on the World War. It has cost us enormously in human lives, in manpower, in products from our land, in oil, in mineral resources, most of which have been lost forever to any further use. The burden upon the nation must be carried as a public debt for several generations before it will be paid back, if ever. And the prospects are not too good that this is the last war.

OUR SOCIAL STRUCTURE is built on the land and out of the products of the land. The cost of World War II, therefore, may be charged against the land of the Nation. If you had asked me 10 years ago if we as a Nation could undertake an enterprise that would mean a charge of \$175 against every acre of the 2 billion acres in the 48 States, or \$875 against every cultivated acre of 400 million acres of our farmed fields, I should have said, "Impossible." For that would be many

times the appraised value of our land. But we have done just this very thing in carrying on World War II, and the end of the cost is not yet in sight. What sort of economics is this, that will encumber the Nation beyond the appraised value of its farms and ranges, forests, and industries? It becomes apparent that we do what it takes to safeguard our liberty of action. We can do no less to safeguard the land base of the country which must support the entire Nation.

FOR SOME TIME I have been studying the problems of population, food, and land, as they affect our future in relation to the rest of the world. Here is what I find.

The population of the world has been growing at a rapid rate for the past 300 years. According to authorities on population, there were 545 millions of people on the earth in 1650; in 1800, 906 million; in 1900, 1,608 million, and in 1940, 2,171 million souls encumbering this earth. And there is no sign of a decline in this rate of increase. If this same rate of increase in human population for the past 300 years should continue for another 300 years, the population of the world would total 21 billions of souls, unless food should fail or people kill themselves in wars and automobile accidents. There is no one I know who believes that the lands of the world could feed so large a human population as 21 billion.

What then is going to stop this increase in human population? Hungry people do not keep treaties. Nor do they stay within their own boundaries. We can see in this trend of things causes of future wars.

Now let us look at the food situation. In 1944, the Food and Agriculture Organization of the United Nations made a study of the food situation throughout the world. The findings are startling. More than half the population of the world is, at the present time, undernourished, having less, on the average, than 2,250 calories per capita per day. A third of the population enjoys between 2,250 and 2,750 calories per capita on the average. And less than 10 percent have over 3,000 calories on the average per person. We in the United States enjoy fully 3,250 calories of food per person on the average. Thus, the food situation of the world is not now satisfactory. It calls for greater production in quantity as well as in quality of foods to bring adequate nutrition to the present population of the world.

It is to our interest to help other peoples help themselves, and to help them produce products that we will accept in exchange for such materials and services that will help them help themselves.

The task of producing food enough and of the right kind, then, is one of the major proportions in view of the rapid increase of population now taking place throughout the world.

What is the area of farm lands which must feed this world population? What is the possibility of increasing this area, and what are the possibilities of improving production on the lands under cultivation? These are questions of highest importance to peace among nations and to stability in world economy.

ACCORDING to the best information available—at the present time, there are being cultivated now about 3.7 billion acres of land throughout the world. According to the same sources of information, it is possible to increase this area to about 4 billion acres, or about 8 percent of the world's entire land area. It is a startling fact that farm lands of the earth are so limited in the face of this phenomenal increase in population and its enlarging demands. Yet the best lands of the world are now under use. Comparatively small areas may be reclaimed by drainage and by irrigation. Low-cost projects have already been carried out in much of the world. Projects of the future will be more costly. The outstanding fact in this study, however, indicates that greater increases in production will come as increased yields from lands already under cultivation than from increases in area, important though these may be.

In view of the vast areas of land that have been damaged, depleted, and destroyed for further farming, we begin to sense how real is the crisis in land use round the world and to realize the necessity of its conservation with use if we are to build a world safe from war.

WHAT can be done in the face of these three tremendously sobering facts? Civilization is running a race with famine. Which will win? This is not an idle question.

If famine wins, wars and rumors of war will be our lot in the future. But if civilization wins, there is hope of peace with security for mankind. The issue at stake is tremendous. But how can we win this race with hunger and famine?

The challenge for increase of food and fats and fibers enough is plain to see. It calls for the application of science in improved crops, in safe-

guarding crops from insect damage and plant diseases, in fertilization of the soil to replenish plant nutrients extracted in the harvest, in the conservation of physical body of the resource of soil, in the conservation of the rain that falls upon it or the waters that are spread upon it, and in full use of all kinds of land with conservation of the soil. These and similar objectives are plain to see. In other words, the technological aspects of using lands to full capacity with conservation is becoming more and more apparent. Much is yet to be learned in this field both from the long experience of farmers of the old world as well as from the experimental studies and practical demonstrations and work of our conservation movement here in the United States. We know enough now that if the measures already tested on a wide scale could be applied to the lands of the world, there would be a tremendous increase in production. And, of still greater importance, the resulting conservation of the soil and moisture resources of the lands throughout the world would insure continuing production for future generations. But how can these measures be carried out on a vast enough scale? We face here a problem even greater than the technical problems. An answer to this question involves an enlistment of the farmers of the world in so great a task. And how may this be done?

FULLY 70 to 75 percent of the peoples of the world are farmers. They are individualists, they are self-reliant, they are industrious, intelligent, practical, and reverent. These are the qualities that have made for the survival of peoples, and are the hope of the future. But these qualities of individualism and self-reliance do not favor organization of farmers in closely controlled groups. It is much more difficult to speed up efficiency in farming than it is in industry. It is more difficult because of the great diversity of lands from field to field, farm to farm, and drainage to drainage. Besides, farmers must deal with the soil, with plants and animal life, with the elements—with the rain and the wind—the weather as well as variable market conditions.

LET us take a look at what we are doing in soil conservation districts. What is the significance of this enterprise that has swept the country like a grass fire on the prairies of the Dakotas? These districts have set three things going at the same time—three important things. For they em-

(Continued on next page)



Huge quantities of soil were ripped off field beyond fence and dumped in the ditch along Highway 10, in windstorm of May 1, 1947.

DIFFERENT FIELDS, SAME WIND!—High wind blew across north central Iowa on May 1, 1947. Many tons of topsoil were lost from the nearly level highly productive fields.

In figure 1 we see some of the soil accumulated in the roadside ditch along the north side of Iowa Highway No. 10 about 4 miles east of Clarion, county seat of Wright County. This material was mostly sand. It sifted through one's fingers. The finer particles—silt and clay—had been dispersed over many square miles of countryside farther south. Just across the fence, to the right, the field from which most of the deposit had been blown was being disked in preparation for corn planting. The tractor operator told me that it had been seeded to oats with sweetclover and redclover in 1945. It had been plowed in August 1946. Therefore, the land had lain bare of vegetation and unprotected for over 8 months!

The common practice in this part of the State of Iowa is not to seed a field to grass oftener than once in 6 or 7 years. Organic matter has been depleted, as evidenced by the sandy material left in the ditch. In a well-aggregated soil these particles would have bound in place.



No fall plowing here; no soil blown from field beyond fence at right. A bit of the cornstalks residue was whisked up from the newly seeded oats field.

In figure 2 we see a field one-fourth mile west of the other one. This had been seeded to oats a few weeks earlier. Preparation of the land was by disk down cornstalks. Here a considerable amount of residue has been lost from the field but there is no evidence of soil having been stolen. On similar soils—Clarion and Webster series—at the agricultural engineering research farm near Ames we found in 1946 that corn yields were reduced only 1.6 bushels per acre when disked, which mixes the residue of the previous crop into the top layer of the soil, was the sole preparation for corn planting. The average yield was 72.4 when the land was plowed, 70.8 when disked. Using plowing as 100 percent in both cases the comparative time and horsepower-hour requirements for disked were 83 percent and 67 percent, respectively.

If the early fall plowing dates generally practiced in north central Iowa indicate a belief among farmers that they cannot get their plowing done in the spring or late in the fall, disked's saving of time and horsepower hours should appeal to them. This is especially true when they also can minimize the blowing of their soil.

R. A. NORTON.

(Continued from preceding page)

body the formula of self-government as set forth by Abraham Lincoln when he said that a Government of the people, by the people, and for the people should not perish from the earth.

First, it is of the people; it gives play to individual initiative. The individual initiative of our people is without question our greatest resource.

Soil conservation districts also provide for the second factor in this formula—"by the people," as it is worked out in approval by the majority.

We find that soil conservation districts also provide for the third part of our formula: namely, "for the people."

This means that conservation contains certain objectives for common security and welfare. The land is the Lord's. The land in a larger sense is the basic resource and heritage of the whole people. We may own it in fee simple in our lifetime, but by paying taxes we admit our steward-

ship of it. The land is the source of the food supply for all the people.

The greatest prospect for safeguarding our lands rests in the procedure that stimulates the growth of a conservation movement out of the soil, so to speak, out of the fields, out of the pastures and woodlands, out of the farms, and in the hands of farmers of the Nation.

What then is the promise of this movement of soil conservation districts for the world? Fully 70 percent of all the people of the world are farmers, or more than 1½ billion souls. These are farming about 3.7 billion acres of land. When this vast population makes use of a mechanism such as the soil conservation district, we shall have the best promise of growing food enough for the people, nation by nation, and for the people of the world as a whole. There is no hope for peace on earth or good will among men until the farmers of the world grow food enough for the world's population.



CUBAN HONORS FOR BENNETT.—A gold medal and the Cuban Order of Merit have come to Hugh Bennett, Chief of the Soil Conservation Service, in recognition of extraordinary services to the government and people of the Island Republic two decades ago. The award, made through the National Agricultural and Industrial Society, confers the rank of *Comendador* (Knight Commander) in the society. It sets forth Bennett's "eminent services lent in the interest of the national economy" when he was leader of a cooperative project between the Tropical Plant Research Foundation of Cuba, the Cuba Sugar Club, and the United States Department of Agriculture.

Bennett's survey is recorded in the book, "Soils of Cuba," one of the most significant studies ever made of so large an area.¹ This survey became the heart of Cuba's modern agricultural program—the physical basis of its revitalized sugar-cane industry. It called for extensive readjustments

of land use to fit land capabilities on more than a quarter million acres, on most of the huge centrals (sugar plantations).

When the survey was started, the nation's basic crop, sugarcane, was suffering severely in many localities from mosaic disease. The principal cane varieties of the world were rapidly tested throughout the Republic, following the determination and mapping of the best types of sugarcane land. Within a comparatively short time satisfactory adjustments of variety to land were effected. Production problems almost immediately improved.

For example, the wonderful mosaic-resistant, high sucrose varieties of sugarcane, POJ 2878 and 2883, from Java, proved peculiarly well adapted to the red Matanzas soils and to the black Camaguey soils; and the drought-resistant variety POJ 2727 fitted the dry Jobabo soils. These and other varieties were tested on nearly 80 centrals. This new scientific method of finding the right varieties of canes and the proper place to grow them quickly brought sugarcane production into proper adjust-



ment with the land. This had a great deal to do with the nation's economy and the Island's huge output of sugar so acutely needed during World War II.

¹ The report of the Commission on Cuban Affairs ("Problems of the New Cuba," published by the Foreign Policy Association Inc., 1935) says of "The Soils of Cuba," "Our discussion of Cuban soils has been based on this invaluable study."

GREEN MOUNTAIN DISTRICT

(Continued from page 34)

John, manager of the cooperative, has found a market for treated lodgepole pine poles and obtained a trial order for tamarack poles.

With the farmers able to devote their time to their farms and improved methods, clearing is progressing more rapidly. Only 9,000 acres had been cleared in the three decades or more before the district was organized. (Of this, 2,000 acres should have been left untouched.) Thus, 13 percent of the investment in land clearing during that period offers little return, but these fields are reminders of the need for knowing what land is good for.

The total cleared during the first 4 years of district operations was nearly 1,300 acres. Nearly 1,000 acres of this was complete during the last 2 years. All is land suitable for crops and all is ready for regular farming operations. Other hundreds of acres are in the process of clearing.

Development of the farm units does not stop at clearing, however. It continues through the processes of improving the fertility of the soil, making the best use of available irrigation water, development and management of woodlands, and prevention of erosion.

Improvement of the parts of farms to remain in timber has hardly gotten under way, except in a few cases. It has been necessary for most farmers to concentrate on the clearing and preparation of their croplands. Nevertheless, the experiences are convincing them of their woodlands' value. In 1941, they asked people to come out and cut all the wood they needed. Today they get stumpage for their trees and many are inclined to wait until they are ready to clear before they sell.

The supervisors are teaching them that the trees on the land not to be cleared are a worthwhile crop to supplement their cultivated crops. They are learning, too, the advantages of managing those trees so that they will yield the best sustained income.

REVIEWS

THE LAND AND WILDLIFE. By EDWARD H. GRAHAM.
OXFORD UNIVERSITY PRESS. NEW YORK. 1947. BIRLIO.
INDEX. 32 HALFTONE PLATES. PRICE \$4.00.

The thesis of Dr. Graham's earlier book, "Natural Principles of Land Use," (1944) was that land managers must depend upon ecology. That of the present book is that wildlife managers must depend upon land. While giving due credit to such artificial measures as flushing bars, clearings, refuges, game farms, predator control, winter feeding, protective laws, etc., the author considers their importance secondary to the importance of maintaining the wildlife factory: the land and its waters.

With this, few modern wildlife managers or administrators would disagree—openly, at any rate. His "lead" from there, however, is another matter. It is that land management in the interest of wildlife is the same type of management that is needed to produce the other goods of the land, while safeguarding the land itself (the last phrase representing the all-important bug under the chip). Few wildlife agencies have progressed so far in their thinking, still fewer in their action programs; and no one claims that "original" numbers can be restored by this or any other means in an agricultural-industrial civilization. Yet, if we want as large a wildlife-byproduct as our land will yield, there is little doubt that the broad basic policy which he advocates is the only sound one.

The perennial \$64 question is: Who is going to do it? Wildlife agencies by themselves cannot. Land operators, as a whole, will not unless they see tangible benefits; yet only they can do it on the privately owned lands of the Nation. If wildlife were to become a cash crop, they might be interested; but there arise the questions of feasibility and effects upon the American tradition of a free outdoors. If they can see (a) that wildlife benefits them in other ways and (b) that wildlife is benefited by the very measures which they would undertake in support of their land, their cooperation might be enlisted.

In the opinion of the reviewer—and apparently of Dr. Graham also—only the argument based upon total land-value holds permanent promise. Biologists have long known that plants and animals, wild or tame, are governed by the same biological principles. The greatest single idea in modern wildlife management, now coming to the fore and well supported by this book, is that wild and tame species alike respond to the same measures of land improvement. Dr. Graham has become one of the foremost apostles of this idea.

Turning to the organization of the book itself: The first chapter makes delightful reading but does little to support the author's thesis. To the reviewer, it seems like straining a point to depict our wildlife heritage in terms

of prehistoric animals, domestication, modern symbolism, and the naming of constellations or baseball teams.

From there on, the discourse moves smoothly, though occasionally interrupted by too-lengthy descriptions of methods without their settings. The author describes the kinds of land on which wildlife can and should be encouraged, what the prospects are, and how wildlife there is likely to affect human interests. He calls needed attention to the importance of the seral stage in wildlife production, the fact that by our use of land we have in effect created most of our vertebrate pests (not to mention shortages), the long-term futility of gadgets and stopgaps, and the as-yet-unorganized means of accomplishment, and many other points too often overlooked by the program-makers. Time and again, he returns to the central idea: that what is good, in the long run, for other land values is good also for wildlife; and its corollary: that a rich and varied biota is a good thing for the land.

The reviewer found the last three chapters (12-14) the most challenging, and he suggests that they be read before chapters 3-11, on the theory that it is better to set the stage before putting the actors through their paces, as the middle nine chapters do. Doing this might deprive the book of an excellent climax, though.

Dr. Graham's style in this book, as in his earlier publications, makes for simple, direct, and convincing reading throughout. One could wish that such a style were more common in American writings on this and related subjects. Apart from its immediate practical utility, which is very great, one of the principal contributions of "The Land and Wildlife" should be to encourage an optimistic viewpoint, which all of us would like to hold but which has been excluded from the minds of many by the apparent existence of irreconcilable conflicts.

The list of 150 references contains the author's well-known and useful annotations. Conspicuous by its absence is a paper that was at least one of the parents of this whole concept: Aldo Leopold's "A Biotic View of Land" (1939).

Dr. Graham's new book is a "must" for students and professionals in the biotic management of land.

—RUDOLF BENNITT



"Special mention should be made of one merchant in particular, O. E. Breazelle, who is going to have printed on his wrapping paper used in his market, how to develop a good pasture. On the other wrapping paper used in his store, he plans to advertise what the farmer needs in the way of cover crops, putting stress on all soil conservation practices."—From the annual report of the Stone County Soil Conservation District, Miss.



SIGN OF THE TIMES.—I was trying to get an early start one morning not long ago. I went to the garage to get my pickup and started out South St. Andrews Street here in Dothan, Ala. I was going to a farmer's place near Hodgesville to help him work out a soil conservation plan for his farm.

I noticed a newly painted seat had been placed at the bus stop. The day before I had seen a few new seats at other bus stops advertising business houses in Dothan—but this was different. I backed up the car and read the three words, "SAVE THE SOIL". As a technician for the Soil Conservation Service and keenly alert to things of this sort, I went over for closer inspection. On the back of the seat were the initials of the Junior Chamber of Commerce.

At the shop that made the benches and painted them I learned that Wallace D. Malone, president of the First National Bank of Dothan, was responsible. I should have known, of course, for Wallace Malone, member of the State legislature representing Houston County, is a charter member of that ever-growing group of citizens concerned about conserving the country's soils.

The Dothan bank president has served as chairman of the agricultural committee of the Alabama Bankers Association and as the association's president. He first became interested in soil conservation when A. A. Sheppard, then a Soil Conservation Service technician at the old CCC Camp at Dothan, took him to what he found to be one of the best farms in Southeast Alabama and showed him what was taking place. Pretty soon after that, Malone was riding in a airplane and saw some



of the huge gullies in Southeast Alabama—gullies he didn't know were there until he saw them from the sky.

When Malone was president of the Alabama Bankers Association in 1944, the association in cooperation with the farmer-supervisors of the Wiregrass Soil Conservation District, sponsored a farmers' meeting in Houston County and awarded certificates of merit to seven farmers who had done outstanding soil conservation jobs on their lands. In 1945, when similar certificates were awarded following a field tour, Malone's First National Bank of Dothan was host at a barbecue supper. For two successive years, this bank put out calendars encouraging soil conservation. At present plans are under way to install a large clock in front of the bank. On both sides of the clock will be inscribed "IF WE LOSE THE SOIL WE LOSE ALL."

—LEROY HORN.

NOTE FROM A DISTINGUISHED TRAVELER

ALEXANDER KIRK

Post Office Box One, Florissant, Colorado

MAY 15, 1947.

DEAR MR. BENNETT: I am taking the liberty of expressing to you my sincere appreciation of the superior quality of assistance which has been afforded me by the members of your Service operating in Teller County, Colo.

Since my retirement last year as Ambassador to Italy I have acquired and settled in a small ranch in this neighborhood and have found that the same short-sightedness with which for thirty years I have contended in the field of international relations is manifest here in the matter of soil depletion and erosion. The whole-hearted, effective and altruistic advice and cooperation which have been afforded me by your personnel in this area have been not only of the greatest assistance but a real inspiration and I wish to congratulate you on the contribution which you are making to the basic problem of our national life.

Yours very truly,

(S) A. C. KIRK,
(Ambassador, retired.)

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UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

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OCTOBER-1947
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CLINTON P. ANDERSON
SECRETARY OF AGRICULTURE

HUGH H. BENNETT
CHIEF, SOIL CONSERVATION SERVICE

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WASHINGTON, D. C.

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WELLINGTON BRINK

Editor

Art Work by

W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with approval of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

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BILLION-ACRE DAY.—On June 9, 1947, the acreage in soil conservation districts, and other districts assisted by the Soil Conservation Service, passed the billion-acre mark.

Five new districts were organized and some area was added to one old district. The total new area for the day was 2,770,000 acres in the following districts: Lower Yakima Valley, West Benton, and Cle Elum, all in State of Washington; San Juan in Colorado, and an addition to Horse-Rush Creek in the same State; and Fulton County, N. Y. *The San Juan Soil Conservation District in Colorado put the cumulative area in districts over the 10-digit mark.*

THE COVER.—Contour strip cropping on



C. D. Blubaugh's famed Ohio farm in Knox County. Four-year rotation. Note shocked corn in strips. Thick vegetation catches and holds rain water, while corn rows across slope serve as check to downward flow of water. Photo by G. C. Pace.

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R. A.

NOTE—
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Mississippi ROLLS OUT A



R. A. Coley and Jerseys; winter pasture of oats and crimson clover.

By M. J. KEESEE

NORTHEAST MISSISSIPPI agriculture is shifting from cotton to diversified livestock as a result of farming the land according to its capabilities. Pastures now carpet many a field that formerly grew cotton. The cow has replaced the mule at the head of the livestock procession.

The Northeast Mississippi Soil Conservation District is encouraging the shift in production by recommending a cropping system and land use plan that is more closely geared to the natural capabilities of the land. In this section, the pattern took a form designed to give the proper balance of pasture, grain, and hay for the dairy industry, and at the same time conserve soil and water.

R. A. Coley's experience typifies the financial

gains resulting from the shift in production. In 1938 Coley bought 44 acres of badly eroded land. (See Land Capability Map.)

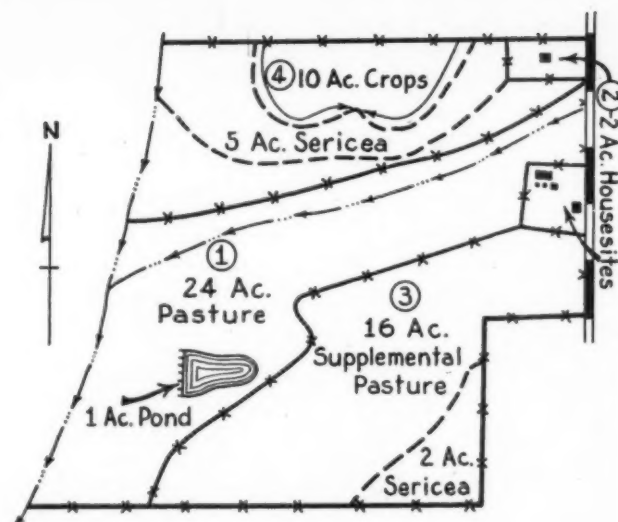
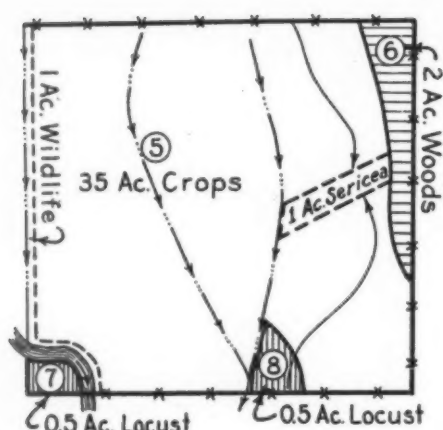
"I got just what was left of the land," the dairy farmer said. "There wasn't a house fit to live in. No barns or sheds. Not even a well. The fences were down."

But Coley moved in. He had 18 scrub cows and the intention of growing cotton and selling milk.

With the assistance from Soil Conservation Service technicians, he started rebuilding. Enrollees in the CCC Camp then at Tupelo, helped to stop the gullies and planted Bermuda grass sprigs in the pasture.

In 1941 Coley bought 16 more acres; in 1943 another 40 acres in Coonewah Creek bottom. This rounds out the land he now owns. From 1940 through 1945, he rented from 22 to 79 acres annually for growing cotton.

NOTE.—The author is district conservationist, Soil Conservation Service, Tupelo, Miss.



LAND USE MAP

R. A. COLEY

TUPELO, MISSISSIPPI

Soil Conservation Service, U.S.D.A.

Here is a picture of the Coley farming operation in 1940:

Crops	Acres	Yield
Cotton.....	47	205 pounds.
Corn.....	15	25 bushels.
Hay.....	9	¾ ton.
Pasture.....	29	
Truck.....	1	
Miscellaneous.....	1	
Total.....	102	

Normal value \$2,700 or \$27 per acre.

He operated 58 acres he did not own. He had paid \$2,700 for the 44 acres he did own. Note the yields: Cotton 205 pounds lint per acre, and corn 25 bushels per acre.

Contrast this with the following summary of Coley operations in 1946:

Crops	Acres	Yield
Corn.....	22	40 bushels (15).
Silage.....	11	14 tons (6).
Oats.....	16	40 bushels.
Sorghum silage.....	(10)	14 tons.
Lespedeza.....	(16) (75)	2 tons.
Pasture:		
Permanent.....	24	
White clover.....	4	
Oats.....	17	
Lespedeza.....	(16)	
Sudan.....	(7)	
Pond.....	1	
Woods.....	3	
Miscellaneous.....	2 (68)	
Total.....	100 (143)	

Total production:	1940	1946	Difference
Feed crops.....	\$349	\$1,505	+\$1,156
Cotton.....	1,090		-1,090
Pasture.....		1,704	+1,704
Total.....	1,439	3,209	+1,770

1933-42 average prices: Cotton, \$0.1163; hay, \$10; oats, \$0.46; milk, \$1.84 per hundredweight; corn, \$0.69; silage, \$1.75; barley, \$0.60; pasture, \$1.50 per acre per month.

Cotton has disappeared entirely. Through the proper combination of crops and double cropping, feed crops were removed from 75 acres, and pasture was grazed on 68 acres of land. Cotton production in 1945, the last year it was grown, had risen to 455 pounds lint per acre. Corn production was up to 40 bushels, silage 14 tons, oats 40 bushels, and hay 2 tons per acre.

In order to compare the total output, the values of crops and pasture produced in 1940 and 1946 have been calculated. These values were based on the 1933-42 prices. This takes out such bias as might result from the rising level of prices during the period. On the basis of these low prices, the farm's total output in 1940 was \$1,439, as compared with \$3,209 in 1946—more than double.

The pattern has changed materially. In 1940 cotton made up 76 percent of the total. Feed crops accounted for the 24 percent balance. Pasture contributed nothing. In 1946 the total farm out-

put was almost evenly divided between pasture and feed crops, pasture having contributed 53 percent, as against 47 percent contributed by feed crops.

Look now at the summary of costs which were required on the Coley farm in the shift from cotton to dairying.

Year	Fertilizers	Ditching and terracing	Buildings	Dairy equipment	Pasture improvement	Total
1940-----	\$189	-----	\$600	-----	\$150	\$939
1941-----	167	-----	260	\$235	497	1,359
1942-----	191	-----	916	40	229	1,376
1943-----	215	-----	925	225	240	1,605
1944-----	135	-----	350	1,462	354	2,301
1945-----	76	\$425	-----	-----	114	615
1946-----	76	-----	200	380	222	878
1947-----	239	45	400	-----	224	908
1948-----	239	53(T)	150	-----	194	636
Total-----	1,527	523	4,001	2,342	2,224	10,617

These costs are actual through 1946 and estimated for 1947 and 1948, a 2-year period required to complete the conservation plan originally made in 1940. In this 9-year period is required a total investment of new capital in the amount of \$10,617. Of this amount \$2,224 goes for pasture development and improvement, \$2,342 for specialized dairy equipment, \$4,001 for farm buildings, \$523 for drainage and erosion control structures, and \$1,527 for commercial fertilizers for feed crops.

Does it pay?

The value of production rose from \$1,439 in 1940 to \$3,209 in 1946, and is expected to reach \$3,735 in 1948. For the 9-year period 1940-48, total production is estimated at \$30,546, as compared with \$15,121 had the old way of farming continued.

When Darryl R. Francis, agricultural economist of the Federal Reserve Bank of St. Louis, looked at the figures, he said, "An outlay of \$10,617 is a heavy investment in 100 acres of land, but it paid in this instance."

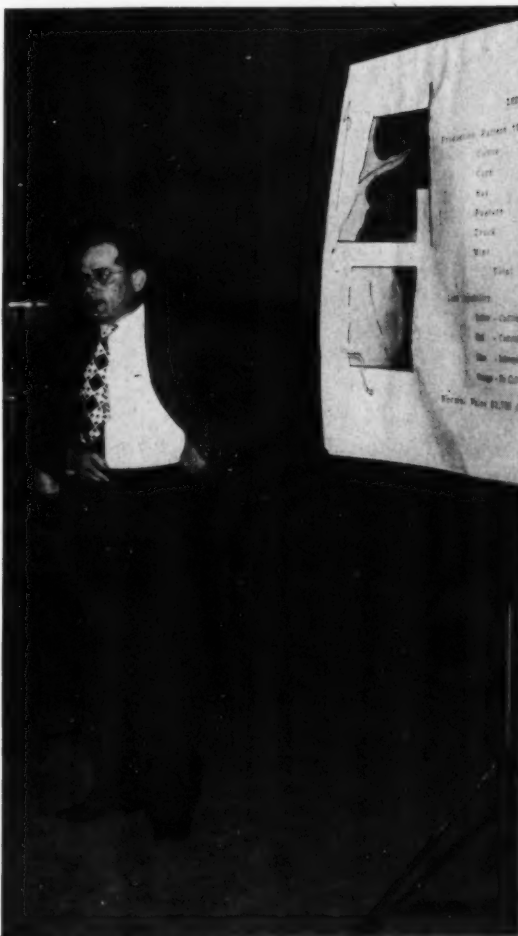
He added: "Feed crops, cotton, and pasture produced for the 9-year period have a total value of \$30,546. Assuming that the old method of farming had been continued from 1940 to 1948, the maximum total possible would have been \$15,121. This leaves, then, a net of \$15,425 increase in volume of output for the 9-year period, which can be directly traced to the soil improvement program and the shift from cotton to a more diversified type of operation."

Under the old system of 1940, with 102 acres of

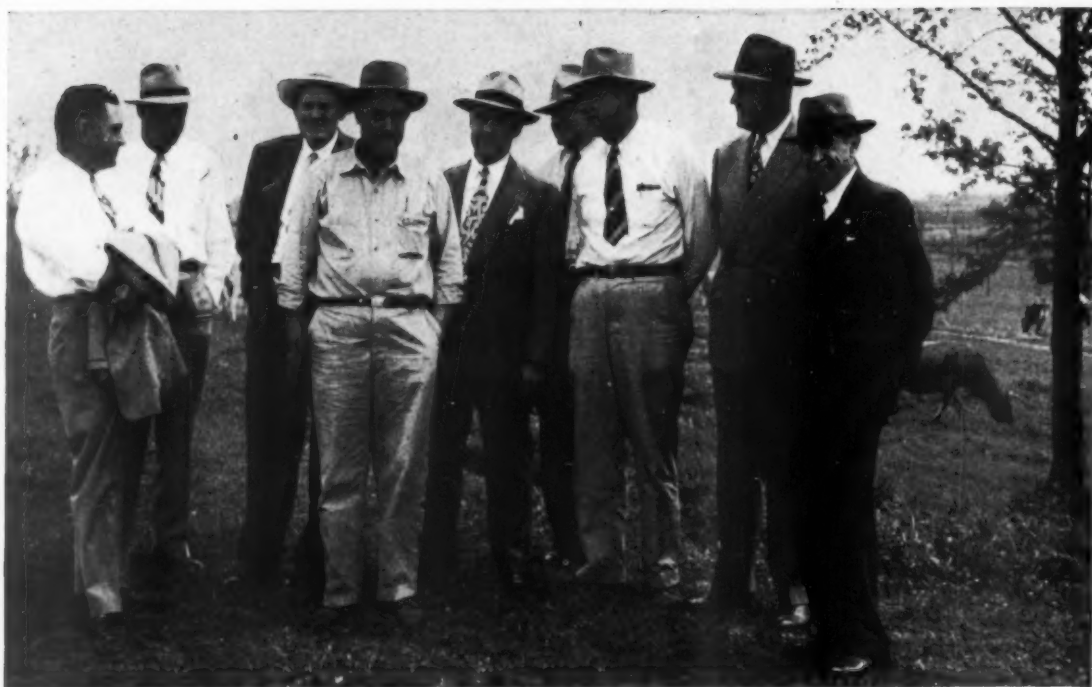
land and using horsepower, the gross return for each day of labor was \$1.47. Under the 1946 program, with 100 acres of land, and again using horsepower, but with mechanized milking, the gross production for each day of labor was \$4.72.

"This increase," said Mr. Francis, "comes about primarily from shifting from a production pattern that did not fit the natural capabilities of the soil to one which is closely adjusted to proper land use."

Real value of the farm has increased as a result of improving the land. Starting with the bare land value of \$2,700, and adding three-fourths the cost of the buildings on the farm, all of the cost of ditching, terracing, fencing, and water developments, and one-half of the lime and fertilizer



Darryl R. Francis, agricultural economist of Federal Reserve Bank of St. Louis, explains Coley's land capability map.



Coley and visitors: W. R. Thompson, pasture specialist, Extension Service; M. S. Shaw, Extension's assistant director; Dr. Fred T. Mitchell, president, Mississippi State College; R. A. Coley; Chester A. Davis, president, Federal Reserve Bank, St. Louis; R. Y. Bailey, regional agronomist, Soil Conservation Service; James E. Gates, assistant State conservationist; G. K. Strickland, St. Louis; Emmett House, president, Union Planters National Bank, Memphis, Tenn.

cost, the real value of the farm will have been increased to \$7,982—an increase of more than \$50 per acre.

"This program," Francis says, "could have been soundly financed with a farm real estate mortgage. By advancing all of the improvement costs over the 9-year period, the maximum year end loan balance would have been \$3,579, if 60 percent of the annual increased income had been applied on the loan actually under a 60 percent of normal value loan, a maximum of \$4,789 loan balance would have been possible."

Thus, according to the banking economist, despite an extremely expensive improvement program, the full cost could have been advanced by a bank on a first-mortgage real-estate loan and have remained well within the 60-percent normal value limits.

Let us take a look at the human side of the 1947 picture, rather than the banking. There's a nice home, tenant house, barns, silos, ponds, and well-kept fences. The Coley farm has 50 head of Jerseys, 75 percent of which are registered. The pastures and fields are green the year 'round.

Coley bottles grade A milk and sells it wholesale to grocery and drug stores. The dairy route now grosses about \$50.

"I've still got some improvements to make in my cropping plan and land use," Coley admitted. "I intend to plant 7 acres of the temporary pasture to sericea lespedeza. That will give the cows green grazing when the permanent pasture is burned up in the summer.

"When that's done, I'll find something else that needs changing. But the first thing I had to do was to give up the idea of trying to make a living growing cotton on the kind of land I had."

MAGAZINE GOES TO COLLEGE.—Word from South Dakota is that college students are finding SOIL CONSERVATION Magazine just about the best source of suggestions for current reading materials. Maybe the supervisors of your soil conservation district will wish to give the local library a subscription. This will add to the library's material for serving the community. It can be just as good a source of suggestions for reading material for all people interested in agriculture as it is for students.



Little River's No. 1 Hired Hand

Oscar Coleman cups a double handful of seed combined on a 150-acre Dallis grass pasture of the N. B. Bates farm near Idabel, Okla.

By E. S. CORDELL

THE LITTLE RIVER Soil Conservation District, in southeast Oklahoma, is a self-supporting business enterprise. Its activities are so many and varied that it has become necessary to employ a full-time work manager. The supervisors believe that other districts throughout the country will in time follow this innovation of hiring an administrator to look after the details of district business.

The application of soil conservation measures has shown a sustained spurt under the work-manager plan. The activities and responsibilities of the district supervisors, however, have not lessened as one might expect; on the contrary, they have multiplied. Relieved of many day-to-day duties, the supervisors have been able to give greater attention to the broad aspects of administering district affairs. For outstanding accomplishments, the Little River Soil Conservation District board of supervisors won the 1947 award of honor presented by the Oklahoma City chapter of Friends

of the Land. The award is made every year to one board of supervisors in each of the five areas of the State.

The full-time work-manager arranges with the farmers for district assistance in applying the soil conservation program that Soil Conservation Service technicians help to prepare. He sees that the conservation measures are established as set forth in the farmer's agreement with the district. He directs the work of all other district employees. It is his duty to see that district-owned equipment is operated efficiently, economically and safely.

The manager makes all purchases, checks delivery and properly stores equipment, seeds, and other materials. He reports monthly to the supervisors on the use of equipment and materials, the amount of money received and expended and the district's probable future needs. When not otherwise employed, he takes a hand on one of the field jobs.

The work-manager is Oscar Coleman. He directs a crew of 12 men who crush agricultural

NOTE.—The author is district conservationist, Soil Conservation Service, Hugo, Okla.

(Continued on page 57)



Supervisors of Little River Soil Conservation District at headquarters in Idabel, Okla. Left to right: C. H. Walker, secretary; Otto Kupke, G. L. Kirk, chairman; Floyd Marshall, vice chairman, and Oscar Coleman, who is also full-time work manager for the district.



Lime is crushed, delivered, and spread on farms of district cooperators on a cost-plus basis.



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LITTLE RIVER

(Continued from page 55)

limestone at the district-operated quarry, haul and spread lime and phosphate, renovate Bermuda grass pasture, mow weeds, construct terraces and diversions, harvest clover seeds, build drainage ditches, plant Bermuda grass, clear brush, and assist cooperators in the application of other conservation practices. Coleman is also a member of the district board. Other members are G. L. Kirk, chairman; Floyd Marshall, vice chairman; C. H. Walker, secretary, and Otto Kupke. These men are endeavoring to make 1947 as good a year as 1946, when twice as much conservation work was applied to the land as in any previous year.

"I am convinced the soil-conservation districts provide the best means for carrying on the badly-needed work of conservation," Chairman Kirk declared. "The districts are truly democratic political subdivisions created and managed by farmers. After all, we farmers have the primary responsibility of conserving the land and it is only natural that we should exercise the authority that our State law gives us to fulfill that responsibility."

On April 11, 1938, 949 land-owning farmers voted to create the Little River Soil Conservation District. The district set up headquarters in Idabel. Starting from scratch, the supervisors borrowed money to buy equipment and materials to lend to cooperating farmers. From the start, the supervisors have operated the equipment on a cost-plus-maintenance basis. To date more than \$26,000 worth of equipment has been bought and more than \$100,000 worth of business transacted. In 1946 the supervisors transacted \$52,000 worth of business in helping cooperators establish conservation programs. Emphasizing teamwork, the supervisors encourage farmers to take advantage of the assistance offered by all agencies operating in the district.

To the end of 1946 Soil Conservation Service technicians had helped 513 farmers to plan and apply a coordinated soil conservation program to 66,000 acres. The total included 7,000 acres of permanent pasture, 16,000 acres on which grazing was properly regulated for the first time, 74 stock ponds, 56 miles of terraces, 8,000 acres of crop residue management, 3,000 acres of contour cultivation and 6,000 acres of cover crops.

The supervisors made many of these practices possible by making available to cooperators 27,000

pounds of seed of Korean lespedeza, 30,000 pounds of Kobe lespedeza, 2,600 pounds of sericea lespedeza, 36,000 pounds of hairy vetch, 10,000 pounds of rye, 8,000 pounds of rye grass, 4,500 pounds of mixed clovers, 500 pounds of carpet grass, and 500 pounds of Dallis grass; 1,666 tons of agricultural limestone and 500 tons of rock phosphate.

REMARKABLE REMARKS.—"We must have more 'crazy' people—erosion-crazed, conservation-crazy—people who see beauty in the idle ribbon of water behind the terrace, in the calm waters of the pond, in the pattern of contrasting crops on a contour, in grass instead of sculpture in the gully, in pasture on the hill and clear water in the streams. In those pictures is genuine beauty . . .

"The signs etched on the land are, for our civilization, the handwriting on the wall. Any place you go, any direction you travel, those signs stare you in the face . . . the handwriting on the land! . . .

"Every citizen must learn of his personal dependence on the fertility of the soil that's now here; he must learn how his children's future and their prosperity will inevitably be measured in terms of the soil that's lost or saved; he must learn to read the signs he sees as he drives down the highway . . .

"If our people could be taught one thing, how to read into the signs etched on the land, their true meaning, then the battle would be half won. That's something everybody must be taught. Not just the farmer."—WALTER HUMPHREY, Editor, *Fort Worth Press*.

SPECIAL ISSUE.—Sometime this fall, probably November, there will be a special issue of *Soil Science* entitled "Soil Conservation and Good Land Use." This special issue will be dedicated to Dr. Hugh Bennett, Chief of the Soil Conservation Service, and will contain a picture and a brief biography of him. It will be made up of eight articles, one by Dr. Bennett and one by the regional conservator of each of the seven regions of the Soil Conservation Service. Dr. Bennett's article will be an over-all presentation that will emphasize the history of the soil conservation movement. Each of the regional conservators will discuss the conservation problems of his region.

Those of you who want personal copies of this special issue will need to order them before publication. The editor is Dr. Firman E. Bear, Rutgers University, New Brunswick, N. J. Paper-bound copies will cost 60 cents and cloth-bound ones \$1.00.

From Council Bluffs comes news that the city's chamber of commerce is considering subscribing to *SOIL CONSERVATION Magazine* for about 100 farmers. This project is recommended by the chamber's agricultural committee. District Conservationist Thoreson says that other chambers of commerce out his way are contemplating similar action.

Leadership IS WHERE YOU FIND IT

by R.Y. Bailey



Jo Lita, the McDowell's older daughter, hears a lot of talk about sericea, kudzu, terraces, outlets, Kentucky 31 fescue pastures, Ladino clover and other terms that would be strange to a city-bred child. She is getting first-hand information about sericea from her father.



This lush pasture of grass and clover has done much toward establishing Wilburn McDowell's place of leadership in his community. Neighbors often say when applying to the Soil Conservation District for help, "I want a pasture like Wilburn McDowell's."



Every furrow on the contour is an unbroken rule on the McDowell farm.

LEADERSHIP is where you find it. I found an inspiring example in middle Tennessee. Willburn McDowell and his wife, who live with their two young daughters on a 78-acre farm 4 miles northwest of McMinnville have not been elected or appointed to any positions, but they have developed a leadership in soil and water conservation that is felt throughout their community.

McDowell is a lean, soft-spoken young man of 28 who, with the help of his wife, has done such an outstanding job of remaking a run-down farm that his neighbors visit him two or three times a year to observe and learn. Most of his neighbors have made a good start toward developing well-planned soil and water conservation programs on their farms.

McDowell had a lot of problems on his poor farm when he applied to the Warren County Soil Conservation District for help. This was in the spring of 1943. Earl K. Schultz had been assigned by the Soil Conservation Service to assist the district with its program. He helped McDowell make a complete soil and water conservation plan on his farm.

Schultz is a man who takes seriously the responsibility of helping a farmer develop a plan on a farm that is his source of income. He gives as much patient thought to the job of working out the best use and treatment on the land of small farmers as he uses in work-

NOTE.—The author is chief, regional agronomy division, Soil Conservation Service, southeastern region, Spartanburg, S. C.

ing with the larger landowners. He found a job at McDowell's farm that called for all his skill. It also called for all of the infinite, painstaking effort that is a part of Schultz. He saw when he looked over the soil conservation survey map that his farm was a tough one to plan.

At that time the farm consisted of 61 acres. McDowell bought adjoining land last year to bring his total up to 78. The sloping fields were poor and some of them had real man-size gullies across the slopes. Much of the land was underlain by a hardpan that limited its use.

McDowell could not put a great deal of money into developing a soil and water conservation plan because his gross income was only \$450 in 1943. He had a wife and baby to support; the second daughter came along since that time. His crop yields were low and he could not expect them to increase in yields until his land was improved.

There was need for terraces and vegetated waterways. Some of the gullies had to be filled before terraces could be built. This entailed a lot of expensive earth moving. There was little farm equipment and one team of light mules was all the power available.

Soil Conservationist Schultz and Farmer McDowell went into all of these things carefully as they planned the details of land use on the different fields. The work could be done quickly and easily if heavy power equipment could be hired, but that would take money. The other alternative was for the work to be done slowly with the team, a plow, pan scraper, and V-drag. This method would necessitate a lot of hard work but very little cash.

McDowell needed all the money he could get for lime, fertilizer, and seeds to build up the productivity of the soil after he got the mechanical jobs done. Though it was going to take a lot of sweat, and maybe a few tears thrown in for good measure, he went along with Schultz in making a plan, and agreed to apply whatever it required.

Since 1943 McDowell has completed the gully-filling jobs, done all of the smoothing and shaping required to get four waterways ready for seeding, and has built about 3 miles of terraces to the

agreed specifications. All of this mechanical work was accomplished with his team of mules and his modest farm equipment. His wife often lent a helping hand. Only 4,000 feet more terracing now remains to be done and this will be taken care of after the corn has been harvested this fall.

McDowell's was not a terracing program; it was a complete soil and water conservation plan. Important as were the terracing and gully-filling jobs, ground cover to keep the gullies from being washed out again had to be provided by growing vegetation. Schultz had told McDowell during the planning that the land had to be covered and he also told him that the land would be too poor to grow the kind of vegetation needed, unless it were limed and fertilized. Every acre of open land, except 10 acres bought last year, has received 2 to 3 tons of ground limestone and 500 to 600 pounds of 0-14-0 fertilizer. Samples of soil are being sent to the laboratory of the Tennessee Crop Improvement Association at Nashville and additional fertilizer will be applied as indicated by the reports from the laboratory.

All of the four waterways that were planned as a part of the water-disposal plan are now well protected by good stands of sericea lespedeza or by mixtures of grasses and clovers. Vegetative protection was established before terrace water was turned into the waterways and the vegetation is being maintained in vigorous condition by additional fertilizer, including chicken manure.

In planning the use to be made of all land on the farm, Schultz and McDowell had a problem of 12 acres that were more eroded and gashed by gullies than the rest of the land. This eroded soil was on fairly steep slopes and was permeable, so it was planned for kudzu.

McDowell had visited a patch of kudzu near his farm and carried a small amount of the green forage home to his cows. The cows ate it so readily that he decided he wanted enough acreage of kudzu for late summer and fall pasture. He had kudzu 4, 3, and 2 years old and has pastured the oldest during dry periods the last two summers.

In relating his experience with kudzu for pasture, McDowell said, "It was just like letting the calves suck the cows when I took them off kudzu and put them on other good pasture. You could tell the difference in the amount of milk the first day. There just isn't any better pasture and I'm

Farmer-tenant leases, with emphasis on encouragement of soil conservation farming, will be discussed by outstanding authorities in early issues of *Soil Conservation Magazine*.



Seed will be harvested from this mixture of Kentucky 31 fescue and ladino clover to plant 14 additional acres.

getting it on the worst gullied and thinnest land in this country. My best kudzu now is on old gullies that were used as the community dump a few years ago."

Two and a half acres of eroded land that was not capable of making more than 10 to 15 bushels of corn per acre is now growing a vigorous stand of sericea lespedeza for hay and seed. Some of this land was reclaimed from idleness and gullies.

The soil conservation survey map had to be studied carefully to find land that was permeable enough for alfalfa. Two acres were found and alfalfa is making fair growth, but McDowell can take you out on the land and show exactly where the "pan" ends and the permeable soil begins. He uses the growth of plants as his indicator.

Two acres of the land that was reclaimed from idleness and gullies, and terraced, now are pro-

tected by an excellent stand of mixed clovers and grasses. Two additional acres are covered with a good stand of Kentucky 31 fescue and Ladino clover that was seeded in September 1946. Seed will be harvested from the grass and clover to plant 14 additional acres of terraced land and one additional waterway. Four acres of thin land that was terraced has been seeded to a mixture of red-top, orchard grass, and Ladino clover. A patch has been seeded to red clover and another to Italian ryegrass and white clover.

Contour tillage was one of the practices agreed upon when the plan was made. Every furrow and every row on this farm follow the contour. All plowing, harrowing and seeding also are done on the contour.

An orchard to produce fruit for family use has been planted on the contour. The orchard will

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be seeded to white clover and ryegrass this fall.

McDowell manages all of his pastures carefully to prevent overgrazing. He mows and grubs to control bushes and blackberry briars. He uses electric fences rather extensively, but is building permanent fences as rapidly as farm income and other conditions permit.

Cultivated land is protected by a rotation of corn, small grain, and a meadow mixture of lespedeza, redtop, and Timothy in a 4-year cycle. Yields already have increased substantially. Corn yields are 35 to 40 bushels an acre where they once were 15 to 20 bushels. He now makes 20 to 25 bushels of oats where he formerly grew none.

McDowell protects his 15 acres of woodland from fire and grazing. He has cut some of the mature trees and had them sawed into lumber that is to be used in farm buildings. He does not expect to clear any more land, but plans to remove undesirable trees as needed on the farm and interplant with trees of desirable species.

As a result of the soil and water conservation plan on his farm, McDowell has all of his land under a cover of protective vegetation most of the time. This vegetation was selected according to the capabilities of the land and the plants. He is marketing the grain, grass, and clover through livestock. Seven dairy cows and 100 hens help convert the products of soil and water conservation into cash.

Seed corn is his third source of income. In 1946 the total income on this small farm was \$3,500, which is in sharp contrast with the \$450 income in 1943. No claim is made that all of this increase came directly from soil and water conservation, but the increase could not have been made without the improvement in the land under his plan.

McDowell believes in soil and water conservation. He said, "This is the only way to handle this land. If I didn't follow conservation measures I would slip back. I feel sure I would have starved out on this place in 4 or 5 years more."

In addition to the help received from his soil-conservation district, McDowell received small quantities of kudzu plants and sericea lespedeza seed from the nurseries of the Soil Conservation Service. These were supplied as incentive materials to get field plantings made in the community for their value in showing local farmers what these crops would do.

The Farm Security Administration made him a standard type loan to improve his cattle. He

had made full use of assistance that was available through AAA. He has spent several dollars of his own money for each dollar spent by any agency in helping him.

The McDowells have used most of their money and labor in improving their land, but they expect to build a new home when prices come down. They also have plans for a milking machine and other electrical appliances that will lighten the work in the home and in the barn.

My visit to the McDowell farm was one of my most inspiring experiences. It gave me a sort of "been-to-church" feeling. So long as there are young people who are willing to work intelligently for what they want, there is good foundation stock left in this country. And when they have the painstaking guidance of technicians like Earl Schultz it's a mighty good combination.

Although the McDowell leadership has been local, its influence is very real in their home community and is spreading. Visitors from distant States and from foreign lands will find their way to the door of these young people. Their names may never be written with that long list of distinguished Tennesseans who have contributed so largely to the development of this Nation, but their contribution is no less real and vital.

QUOTABLE.—"Soil is not really saved at conferences, conventions or clinics. Rather, the soil is and must be saved on farms by farmers. . .

"The most effective way to get people to act and act quickly is to make an appeal to their basic instincts. Three of the most basic instincts common to all human life are: (1) Preservation—the urge to survive. (2) Patriotism—to one's family, community, and Nation. (3) Piety—respect and reverence for the God we worship and all that He created.

"We want to get everybody interested and active in saving the soil. We should, therefore, try to use the power of an appeal to these three basic instincts. It is perfectly logical to present the case for saving the soil in this manner. . .

"Nothing, literally nothing, has ever succeeded over a long period of time on a poor and worn-out soil. That means that the world's welfare, as well as our own, is irrevocably tied to the fertility and productivity of the soil."—DR. IDE P. TROTTER, director, Extension Service, Agricultural and Mechanical College of Texas.

Jesuit Fathers ARE SKILLED STEWARDS OF *the Soil*

By GUY R. JONES

KNOwn for their agricultural skill, the Jesuit Fathers have left their imprint on the soil at St. Charles College, Grand Coteau, La.

Almost from the time the college was established in 1837, the Fathers planned and toiled to make the institution's 800-acre farm productive. For more than a century the farm has supplied the institution with food, and contributed to the financial support of the Jesuit organization by the sale of surplus produce.

Not only did the Jesuit Fathers engage in the practical business of raising food; they also gave attention to the landscaping of the college

NOTE.—The author is district conservationist, Soil Conservation Service, Opelousas, La.

grounds. Today these grounds are one of the beauty spots of the South. Flowers, shrubs, fig, pear, and orange trees, a grove of pines, pecan trees, and giant, moss-draped liveoaks—all these combine to make you feel that you have stepped back a century to the days of the old South when gracious living was the pattern.

Erosion began soon after the land was put in cultivation and the farm declined gradually but steadily until recent years. The Jesuit Fathers did not, however, sit idly by and watch the topsoil wash down sloping fields into the bayou while



Evans Noel, farm foreman, shows sweetpotato vines left on ground for grazing after harvest of crop. Planted to sweetpotatoes and oats in alternate sections, this once-eroding field is contoured and terraced like the rest of the cultivated land.



Cattle are turned into sweetpotato fields after harvest to clean up vines and potato culls. Besides providing nourishment, this practice is believed to reduce the weevil menace. A strip of oats, also for grazing, is barely glimpsed at left.

gullies grew wider and deeper. They took various steps to check the loss of soil, and they were among the first to offer their cooperation to the Grand Coteau Ridge Soil Conservation District when it began operations in 1940. In December of that year the college signed an agreement with the district to apply a coordinated soil conservation program to its farm. The program was completed in 1944 and has since been on a maintenance basis. In 1946 the college was awarded a certificate of merit by the Louisiana Bankers Association in recognition of its outstanding soil conservation work.



Front of main building. The college grounds are noted for their beauty. The farm is now a thriving enterprise; erosion controlled and productivity restored.

Under its conservation program the college built almost 5 miles of terraces to keep the rain from dashing down the slopes, cutting gullies, and washing topsoil away. The terraces ease the water into outlets covered with vegetation that protects the soil. Contour furrows on all the cultivated land and the terraces support each other. Seeded to common lespedeza and Bermuda grass, the terraces produce hay for the farm's livestock.

Other dovetailing practices in the conservation program included cover crops that help to maintain or increase fertility and that protect the soil at a time of year when the land otherwise would be exposed to erosion; cutting the remains of harvested crops into the ground surface to return organic matter to the soil to help absorb moisture and resist erosion; seeding pastures to hasten the development of nutritious grasses; and stocking the pastures at a rate to avoid excessive grazing and to give good grasses and legumes a chance to grow and spread. Fertilizers are also applied as

needed. Rotation of crops rounds out the program.

In planning and applying the program, the college had the assistance of technicians of the Soil Conservation Service work unit in Opelousas and of other agencies.

Brother Martial O. Lapeyre, farm superintendent, says, "Conservation helped in eliminating the wash from our cultivated fields. In a dry season, it has a tendency to hold moisture in the ground.

"We have no accurate records before the conservation program was installed but I estimate that conservation has increased yields one-fourth to one-third."

A century ago the crops were cattle, sugarcane, and truck. Today they are sweetpotatoes, corn, truck, hay, beef, milk, and pecans.

The farm usually has about 30 Holstein cows and 70 head of mixed beef cattle. There is year-

(Continued on page 69)

He tackled a RUN-DOWN FARM



Waddleton mows to control weeds. His pasture has been cleared of shrubs, then leveled, sodded, fertilized, and seeded to Kobe lespedeza and white Dutch clover, excellent forage plants.

By OTHO J. GIPE

O. W. WADDLETON faced a gloomy future when he bought a 50-acre farm near Winnsboro, Tex., in 1939. Badly eroded, the farm had become so unprofitable that the previous owner had not been able to make a living from it even when he stopped paying taxes and interest on a loan on the land. After severe sheet and gully erosion had put 12 of the 50 acres out of production, the former occupant had given up and moved away.

Waddleton bought the run-down place for \$450 through the Federal Land Bank. When he moved to the farm in the fall of 1939, its average income had been \$400 to \$500 a year, all of which was derived from cotton and corn. The average cotton yield was about one-fifth bale per acre, corn 10 bushels per acre.

With a large family to support and a down-at-the-heels farm to do it, Waddleton confronted a

hard and discouraging job. He applied himself diligently, worked long, tiring hours. He put in other crops besides corn and cotton. He got some stock. Gradually he built up his income. From 1940 through 1944 he increased the average income to about \$770 a year—\$190 from 2 bales of cotton produced on 5 acres; \$50 from 100 bushels of corn on 10 acres; \$150 from truck, including sweet-potatoes and peas; \$300 from milk; \$55 from 2 calves; and \$25 from chickens.

Although Waddleton built up his income, the future looked even worse than before because erosion was occurring faster and faster. Waddleton realized that as the topsoil washed away, the farm would become less and less productive and no matter how hard he worked he would be unable to maintain the income, still too small to support his large family properly. It looked like a losing battle.

Then he heard about soil conservation districts and went to see the supervisors of the Hopkins-

NOTE.—The author is work-unit conservationist, Soil Conservation Service, Winnsboro, Tex.

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Rains-Wood Soil Conservation District in which his farm is situated.

"My land was really going downhill fast when I signed my agreement and the Soil Conservation Service technicians came out to help me, Waddleton recalls today. "Heavy rains had made the erosion much worse after 1940 and gullies were cutting into several areas. Things looked bad for me then."

With hope in his heart for the first time, in the summer of 1944, Waddleton set to work on his conservation program. Using his own work animals and district-owned equipment, he began a system of terraces to hold the rainwater in check. He has now completed 10,000 feet. To stop gully-ing and level off gullies, he planted kudzu, a crop that also is used for grazing and hay and that brings in additional revenue when its crowns are

Waddleton's cotton yield has increased from $\frac{1}{8}$ to $\frac{1}{2}$ bale per acre, corn from 10 to 30 bushels, sweetpotatoes from 60 to 200 bushels. In 1946 he received \$1,100 for his cotton and sweetpotatoes alone. From 2 acres planted to peanuts following a crotalaria crop, he harvested 4 tons of hay which he fed to his stock and 4 tons of peanuts which he sold for \$360. Before he began his conservation program the farm could carry only three milk cows and calves and four head of work stock, but now it supports eight milk cows, three head of white-faced beef cattle, five calves and four head of work stock.

In the past 12 months Waddleton has received \$800 for milk, \$250 for calves, \$100 for chickens, \$400 for table peas and \$150 for Irish potatoes, total cash income from crops being \$2,110. This

(Continued on page 69)



Betty Ann, Florene, Lodean, O. W. and Glenn Waddleton chop cotton planted on contour after crotalaria has improved soil. The terrace bearing corn on the left was made by Waddleton with his team and a terracing plow furnished by his soil conservation district.

sold. His entire cultivated area has been seeded at least once to crotalaria and most of it to Austrian winter peas, crops that add nitrogen to the soil and improve its texture and composition. Sericea lespedeza is used as an erosion-controlling, soil-improving, grazing and hay crop. Waddleton has cleared 3 acres, levelled and seeded his entire pasture to Kobe lespedeza and white Dutch clover to improve and increase the livestock forage. He fertilized the pasture with 400 pounds of phosphate per acre to insure a good stand of nourishing forage plants. He mows the pasture to control weeds that otherwise would compete with the forage plants. Today every acre of the farm is in productive use.



Waddleton and son Glenn in 4-acre field of kudzu, the plant that holds soil, stabilizes gullies, furnishes grazing and hay, yields cash from sale of crowns.

Among the Conference leaders, left to right: Dr. Otto Rahn, Editor Russell Lord, C. M. Long, Dr. Paul Cannon, Paul Bestor, M. L. Wilson, Warren S. Thompson, Chester C. Davis, Dr. Jonathan Forman.



They talked of **LIVING SOIL**

By MORRIS E. FONDA

ONCE AGAIN we met—c o m m o n e r, doctor, farmer, conservationist, professor, and many others—for the sixth annual conference on conservation, nutrition and human health. On June 28 and 29 more than 200 of us gathered together under McGuffey's elms on the campus of Ohio University at Athens to hear outstanding authorities from all corners of the Nation discuss nutrition and all of its ramifications.

There was a sense of expectation as the group gathered for the tour on Saturday morning. But it seemed to me the conference really got under way when Ollie Fink offered his celebrated "pyramid of water" explanation. Although minus the

customary currency which Ollie often displays as he dares any member of the audience to name a material which water did not help develop, he did relate the dramatic story of water and its importance to other resources.

In his discussion of the living soil, Dr. Otto Rahn, professor of agricultural bacteriology at Cornell University explained very simply the movement of elements—from man to the soil, to the plant, to the animal, and finally back to man. I think most of us sat up in our seats rather sharply when Dr. Rahn reminded us that the elements which our bodies contain today are identical with those which were in the bodies of dinosaurs thousands of years ago. Of course, the rota-

NOTE.—The author is head, education section, Soil Conservation Service, Milwaukee 12, Wis.

tion has been completed numbers of times in between!

Although many of us believe that bacteria is quite evenly distributed in the air and in the soil, Doctor Rahn explained that about 99 percent of all bacteria is in the soil—and that soil not only has bacteria but many other organisms. "After all," said Dr. Rahn, "animals, including man, are not necessary for the world to go on."

Dr. R. H. Bray from the University of Illinois discussed plant nutrients in soil. We were told that an acre of soil 14 inches deep (average condition) contains 420,000 pounds of muriate of potash; 1,200,000 pounds of 20 percent super phosphate; and 9,000,000 pounds of Ammonium sulphate. Nature never did quite figure out a way of having a storehouse for nitrogen and oxygen, the mobile elements. Nitrogen is usually in quantities smaller than plant needs for maximum production—consequently, the size of the plant's root system is an important factor in its ability to secure these mobile nutrients.

Dr. Carl Huffman, Michigan State College, afforded the group some good laughs while presenting his paper on deficiency of trace elements in animals. Many of us could not quite imagine how the good doctor could transport all of the sizable hair balls which he brought along to display to the assembly. They were of various sizes and forms—illustrating a symptom of deficiency of a trace element. Pictures of cattle suffering from cobalt deficiency were shown and when this trace element was supplied in the proper proportions the trouble was removed. Wood chewing, hair eating, and sucking could all be symptoms of trace element deficiencies.

Louis Bromfield was in fine fettle addressing the group Saturday evening. He gave the story of his farm—of the results he is securing from the application of soil conservation and generally good agricultural practices. I have heard Louis tell of his farm on several occasions, but never have I heard the same story twice. After his talk an open discussion brought out many interesting and thought-stimulating questions. Louis Bromfield, Dr. Forman, Ollie Fink, and others helped with the right answers.

M. L. Wilson, Director of Agricultural Extension and Ladd Haystead, farm editor of *Fortune* magazine held forth on Sunday. M. L. discussed the need for educational processes. In his inter-

esting fashion, Ladd Haystead told about many of the new gadgets now being used successfully in farm buildings and homes. These modern improvements included such things as the push-button system of silage dispensing; manure cleaners, minus rubber boot protection; the new wonders in the farm home which electrification has brought—in fact, farm folks can now have every thing city people have, plus all the advantages of rural life.

Robert Cook, editor of the *Journal of Heredity*, talked about the conservation of genes and soil. He pointed out that soil erosion and gene erosion accelerate one another—that we are squandering our intellectual topsoil in each generation. The results of a survey disclosed that the woman college graduate averaged one child—an example of population erosion. Dr. Thompson, director of the Scripps Foundation for research on population problems at Miami University, gave evidence in his paper on population problems. "We cannot withdraw," he said, "in our own shell and let the rest of the world go by. Upward population trends is still one of the world's major problems."

Dr. Hedback, prominent physician of Minneapolis, Minn., could not attend but his paper on the aging of man was read by Dr. Forman. Dr. Hedback's paper related how man had for ages been seeking a means for a longer life. Lower animals outlive their growing period by five or six times and by the same rule the human species should approach 125 to 150 years. Some progress is being made along these lines. In 1900, 18 percent of the population was over 45 years of age and in 1940, 27 percent was over 40. Both child care and removing some of the deficiencies in the sunset zone of life helped. However, Dr. Hedback pointed out that life cannot be measured alone by merely an increased span but it also must be judged on the basis of useful accomplishments.

Dr. S. A. Wilde, of the University of Wisconsin, discussed forest soils and forest growth. He brought out the fact that woods constitute the only crop in this country not in danger of overproduction for a long period of time. Dr. Paul Cannon, of the University of Chicago, gave us much food for thought in his discussion of proteins. He related the results of amino acid deficiencies and stated that protein needs for maintenance are less exacting than those for growth—but that proteins are very essential for good health.

C. M. Long, farm manager from La Fayette, Ind., discussed the farm conservation plan. It was extremely gratifying to all professional soil conservationists, I am sure, to learn how a private farm manager is basing his work and developing his plans on the fundamentals of soil-conservation methods. Starting with the soil and capability of land, Long related how he and his associates assist landowners to develop farm conservation plans which have as their end product a soil kept at home and a better farm income.

Dr. Curt Richter from Johns Hopkins University discussed dietary habits and gave the group the results of much research in this field. I was impressed by his statement to the effect that reliability of appetite is a guide to dietary needs. DeWitt Wing from Normal, Ill., discussed pedigree breeding and gave his views on general land problems.

Dr. Forman summarized the conference as the sun started to set over the stately elms. It was a good conference, one where the sands of knowledge on soil health are gradually accumulating. This session pointed out the need for more and more information on a subject which appears to be of vital importance to all of us.



SUBSCRIPTIONS ON THE CONTOUR.—Bruce Clark, Illinois' State conservationist, observes that, "Subscriptions to SOIL CONSERVATION will probably be given to those entering the contour-plowing contest in the Livingston County Soil Conservation District."

DISTRICT ITEMS WELCOMED.—Several pages of this issue are devoted to items of district experience culled from letters written by farmer-cooperators. This is one way to keep up with what's happening out across agricultural America. This magazine is eager to have first-hand information of this kind.

REVIEWS

FARM MANAGEMENT. By Black, Clawson, Sayre, and Wilcox. The MacMillan Company, New York, 1947. 1,055 pages. Illus. Price \$5.50.

This book was written primarily for use in the junior and senior years in agricultural colleges. However, the nature of the material covered the very practical approach to the problems of farm management, and the easy style of writing should make it of considerable interest to farmers, soil conservationists, professional farm managers, and others dealing with farm management problems.

The book's analysis is in terms of the farm as a whole. Case examples are used freely, and the principle and its application are taught at the same time. This makes meaningful the treatment of the various problems.

No rules for successful farming are laid down. Instead, an attempt is made to provide a method of analysis that any farmer can apply to a situation of his own. Stress is laid on alternative methods of management that will fit the physical situations on different kinds of farms. Soil conservationists who are daily dealing with these very complex problems would do well to study this work, particularly for help in analyzing the farm business and determining the various alternative methods of management.

Because of the book's logical organization, one need not be frightened by its 1,055 pages. It is easy to pick out those particular problems in which the reader is interested and one need not read the entire book to get a lot of help out of the individual chapters.

Considerable emphasis is laid upon the time span for which farm plans should be made. The authors point out that "the optimum use of resources is obtained when they are so used as to contribute the maximum to production over the whole time span of their use." They also state that farm plans should be made to cover a long period—10, 15, or 20 years and in some instances even up to 50 years. These principles have been stressed in all the discussions of farm planning and management throughout the book.

Chapter 28 deals with planning the farm. The authors state that the basic information required for any job of farm planning must include first of all a map of the farm. Generous illustrations are given of soil survey maps, conservation survey maps, and farm lay-out maps. The principles of land classification are illustrated by case examples of specific farms identified by location. The authors are to be commended for their emphasis on the physical inventory of a farm as a starting point for farm planning. Unfortunately, the description of the land classification system used by the Soil Conservation Service as described in this book is not up-to-date. The system described here covers the classification scheme which involved only five land-use capability classes. This system was revised in 1941 to include the eight land-use capability classes now being used by farm planners through-

out the Soil Conservation Service. The principles of land classification and their use as discussed in this book, however, are very sound and should be recommended to anyone dealing with farm-management problems.

In the chapter on the role of public agencies in farm management, it is disappointing to note that only two lines are devoted to the role of soil-conservation districts. The previous discussions of planning a farm so accurately describe the procedures followed in soil-conservation districts in the making of conservation farm plans that it would seem somewhat fuller treatment of the districts' functions would have been appropriate.

This book is one of the most practical treatises on farm management to appear in recent years. The reader is not encumbered by a large volume of hard-to-understand statistics, but he is aided in his reading by an easy style of writing, his agreement with the authors' practical approach to various problems, and only sufficient statistical data to constitute valuable reference material.—A. M. HEDGE.

He Tackled a Run-down Farm

(Continued from page 65)

is in addition to the value of the corn and hay and other livestock feed crops and the food grown for family use.

In 1945 Waddleton sold half of his 2,000-pound crotalaria seed crop and with the proceeds paid off the loan on the farm. He has built a \$1,000 barn and plans to build a new house next year. He pays taxes promptly in order to benefit from the usual discount.

Through hard work and an intelligent application of a coordinated soil-conservation program, Waddleton has changed an eroded, run-down, abandoned, tax-delinquent piece of land into a profitable farm enterprise. He looks to the future now with a knowledge of security for himself, his wife and their 10 children.

Jesuit Fathers Are Skilled Stewards

(Continued from page 63)

round grazing at the rate of a cow per acre. The college buys supplemental concentrate feeds. The dairy cattle was also fed grass silage, the grass coming from the meadow and pasture land. With the grazing land divided into three parts for rotated grazing, the improved pastures are carrying more cattle than ever before.

The farm is divided roughly as follows: Cultivated, 100 acres; pasture, 100 acres; meadow, 30 acres; woodland, 500 acres; and college grounds,

70 acres. The woodland provides fence posts. In earlier days it also supplied fuel.

Dallis grass, common lespedeza and small amounts of Johnson grass compose the vegetation of the pastures and meadow, all overseeded with mixed clovers. Soybeans are grown with the corn to help protect the soil against erosion and to enrich the land for the next sweetpotato crop. After harvest the cattle are turned into the fields to forage the soybeans, potato vines, and potato culls left on the ground. Cleaning up the potato crop in this way is believed to reduce weevil infestation.

PROFITABLE UNDERTAKING.—"In 1940 my farm was not making a dime of profit and hadn't made a profit for several years," wrote L. L. McAllister, Greensboro, N. C., recently. Then this farm, through his soil conservation district, obtained help from technicians of the Soil Conservation Service. A farm plan was developed, custom-built to cope with his particular set of problems.

"I found out the total cost of helping me plan and carry out a conservation system was approximately \$135. The Government invested \$135 in me and the land I farm.

"So far I have paid into the United States Treasury a total of \$2,511.98 on account of income the farm produced. I will pay about \$1,000 more this year."

50 BUSHELS BIG AND STOUT.—"I want to tell you what I made and saved by contouring a 20-acre field that I have farmed for 42 years, that was broke and planted on contour (first time) to corn in 1946," says Jim Hester, Homer, Ky.

"This field runs from 6 to 10 percent slope on three-fourths of the field. The Soil Conservation Service laid it off on the contour.

"This field was planted on the 30th and 31st of May.

"And on the 1st evening of June, 24 hours later, we had a hard, quick rain.

"Threw the branches full and overflowing.

"Knowing this field as I did, I dreaded to go back to it for I was sure 35 percent of my fertilizer was in Green River and perhaps 20 percent of my corn.

"But, to my surprise, I don't think I lost a handful of corn or over 1 percent of fertilizer.

"This field has never before made over 40 bushels per acre. But this year it made 50 bushels big and stout."

FARM MAPS TELL STORY.—"I started contour farming in 1942," says Maynard Brandt, who lives on a 120-acre farm in Sauk County, Wis.

"We now have 240 rods of diversion ditches above fields and 65 acres of contour strip crops. We have planted 2,500 trees on a steep hillside and renovated 4 acres of pasture land. We have a much better knowledge of our land capability through the farm maps and soil tests furnished us by our county office.

FARM PLANS LAY SOUND BASIS FOR GAINS

"We feel that we have increased our farm yields at least a third through the above practices, plus correct fertilizing of our soil. Through building and preserving of our soil and 10 years of breeding and improving our herd of brown Swiss we have also increased our income at least a third per acre and per cow.

"... we are now organizing a community watershed which consists of 6,600 acres. On these 6,600 acres we have a good start on soil-preserving practices which should greatly improve our community.

"We feel that these soil-saving practices will help us to raise our family of four children and make it a better place for them to live in the future."

350 MORE FARMERS SEEK PLANS.—"I live in western Iowa in an area of loess soil that had completely lost its grass cover," writes Don Anderson, Honey Creek.

"Part of it was plowed in the boom times of the first world war, part of it in the depressions of the early-thirties and what little remained, even in fence rows and woodland areas, was completely destroyed in the drouth years of '34 and '36.

"During the next few years following the extreme drouths the rolling land under a corn-oats-sweetclover system of farming the soil was washing away at an ever-increasing rate, gullying the hill land and silting full the drainage ditches nearer the Missouri River.

"Grass legume mixtures on rolling land, contour farming, terraces and grass waterways, used according to the advice of SCS technicians, were definitely showing that this serious erosion could be brought under control.

"On April 28, 1944 a Soil Conservation District was set up in West Pottawattamie County and soon after that the first SCS technician came to the county. I feel that the organization of this soil conservation district and the subsequent technical assistance have, in less than three years, pointed the way in no uncertain terms to a permanent and prosperous agriculture in this area.

"Possibly I could explain it better by telling of the work that has been done on my own farm. Most of the rolling land has been seeded to bromegrass and legume mixture. Cattle feeding is the principal business on my farm. I have found in the last three years that I could feed cattle profitably on that grass. I have also found that by feeding on grass I could get more beef from the corn I raised and have been able to increase from about 200 head to 325 head of cattle fed during the year without buying any additional feed. The production of beef from my farm under what I like to call the soil conservation way of feeding beef cattle from the 1946 crop will be about 40,000 pounds of beef on the hoof greater than the old way of corn, oats, sweetclover, and dry lot feeding. With this grain, I can feel it in my pocketbook and in my rolling land tied so that it can't wash away.

"About 350 farmers that do not have complete farm plans have requested assistance from the district in completing farm plans."

PROGRAM MAKES FARMING EASIER.—"The soil is staying in place on our farm since we have been planting and cultivating around instead of up and down the hills," reports Richard Evans, Urbana, Ohio.

"When my father planted corn up and down the hills (in straight rows) and it washed out and had to be replanted by hand as many as 2 or 3 times a season, I used to wonder if there would be any soil left on the home farm for me when I got old enough to take over myself. I started farming the home place about 14 years ago. The first change I made was from a 3- to a 4-year rotation. This gave us a 50 percent increase in acreage of legumes and grasses and a higher-quality hay. We were not far-

sighted enough to do anything about planting row crops on the level until a soil conservation district was formed in this county in 1944. I was one of the first to apply for assistance. Our soil was surveyed and a cropping program was set up. Having a definite program worked out for a period of several years has made the job of farm operator an easier task.

"Since then we are using more lime and fertilizer, producing more manure, have planted some 3000 trees on submarginal land. Since starting this land-improvement program our income is showing a definite increase."

1500 TREES ON FARMSTEAD.—"Four years ago this June I bought a quarter-section farm located about five miles northwest of here," reports Allen F. Black, Broken Bow, Neb., a cooperator in the New Helena Soil Conservation District.

"Much of the land was worn out, in parts badly eroded, barren of trees around the farmstead and, in general, a typical unproductive and undesirable farm. . . . As a result of this program, mapped out by the Soil Conservation Service and followed by us as a cooperator, we now have an attractive and productive farm.

"Unightly and destructive gullies have been plowed in, smoothed over and seeded to bromegrass, we now have two fine pastures, one of cool season grasses and one of warm season grasses, both of which are thriving and to some extent on land which was unsuitable for farming. The farmstead which was barren of trees now has some 1,500 trees of various kinds which will amount to a very satisfactory windbreak and grove within the next year or two."

FARMING AGAINST THE WIND.—"I farm one-half section of quite sandy land in western Battineau County," says Simmon Barlow, Maxbass, N. D.

"This type of land is very subject to blowing and has to be farmed in a conservative manner.

"On my particular farm a soil survey was made and a conservative plan written. In the plan I agreed to farm my land in 10-rod strips against the prevailing wind. Also, the stubble that would ordinarily be plowed under is kept on the surface to keep the wind from blowing the soil. I realize if the land is allowed to be kept black the wind is sure to blow the soil away. When I summer fallow the surface is kept in a trashy condition.

"After the soil survey was made I seeded to grass all of the land that showed it was not good for farming. This will produce some good stacks for feed.

"There was 40-acre field that was blown up to sand dips and with aid of the district machinery these sand dips have been leveled out and the land put back to crop.

"Another part of my conservation plan is to plant 3 rows of trees on the north side of my land to help keep the wind down. I figure if it will keep snow from blowing in the front yard it will keep the sand from blowing too."

LIKE RESULTS OF PLANNING.—"We, the wife and I, own 360 acres and rent 40 acres, which gives us 400 acres," says J. S. Rebane, Thurston, Neb.

"On this land we make our home we are trying to save our soil and water to produce food for our family of 10 children and the Nation.

"Three years ago I started to do soil conservation work with the help of the Thurston Soil Conservation District; first we did some contouring of row crops, which was a great help, but found that this was not enough so with the help of the trained men from the soil conservation district, we bladed gullies and started building terraces.

"We seeded the waterways and some land we sowed to

LETTERS NOTE INCREASE IN CROP YIELDS

pasture. We like the idea of soil conservation districts planning the best use of every acre.

"Many of the practices we do with our own equipment, but for big jobs like blading gullies and building terraces we need additional assistance. These practices properly laid out and maintained will be permanent . . .

"Many farmers in this county are getting a good start saving their soil and are seeing its benefit."

LAND RECLAIMED.—"I farm 320 acres of irrigated land in the Wet Mountain Valley," writes Lea E. Adams, Westcliffe, Colo., a cooperator in the Divide Soil Conservation District. He continued, "I have 80 acres of timothy and clover pasture, 40 acres of alfalfa, 60 acres of timothy and clover meadow and 140 acres of plow ground. Four years ago there was at least 30 acres of waste land, covered with willows, and with creek beds winding through it.

"My first project was to pull willows, cut a new channel for Taylor Creek and fill in the old channel, also level the ground on both sides of the creek, thereby reclaiming some of the best land on the farm.

"The second project was leveling and preparing for border irrigation 40 acres of land which we have seeded to alfalfa.

"The third project was straightening Venerable Creek, pulling willows and leveling land along creek. These projects have certainly improved the land and have increased its value several thousand dollars.

"I have increased my yield of timothy and clover hay on 11 acres from the original 10 to 45 tons, by the application of sheep manure, which at the present prices amount to about \$850. I am applying about 500 tons of sheep manure and three tons of superphosphate this year.

"We plan on leveling the remaining 140 acres of plow land as soon as possible. . . ."

LAND VALUES BOOSTED.—"Those of us who have finished the complete farm program as planned . . . have found that we have almost completely stopped erosion. Our land is becoming more fertile and our yields are increasing," reports Albert W. Watson, Wayne, Neb.

"Our local real estate men recognize this and are placing a higher value on farms following a plan of operations as laid out by our local soil conservation district.

"Our highway commissioners tell us that where farms along the highways are following good conservation plans, much maintenance expense is eliminated. Highways and culverts do not become buried by silt every few years and the expense of elevating highways and of digging out and raising culverts is eliminated."

COST OF PRODUCTION LOWERED.—"My son and I own and operate 400 acres," says Howard C. Herald, a cooperator with the Noble County Soil Conservation District, Ligonier, Ind. "Like most farms here in this region," he continued, "the problem of maintaining production is serious. I began operating this farm about 30 years ago and took considerable pride in the fact that I was doing a good job. Now I find that I have wasted large amounts of commercial fertilizer, to say nothing of expensive legume seeds, time, and labor. After all, farmers are not soil chemists and we had been using incorrect amounts of fertilizer. Our use of land was wrong, too, because of improper rotations.

"In May, 1945, M. W. Richman, work unit conservationist and farm planner of the Soil Conservation Service . . . came to our farm and made tests of the soil in each field. He suggested a change in rotations ranging from 3 to 8 years. We had been using a 4-year rotation on

all of our fields. Although he found the fertility relatively high, increased use of fertilizer was recommended. One of the very important suggestions was a program of fertilization of permanent bluegrass pasture. This has increased pasture yield more than 100 percent.

"Our yield of oats averaged about 40 or 45 bushels per acre. In 1946 our average yield was 75 bushels per acre with one field yielding 90 bushels.

"The plan . . . makes the following farm program possible:

42 dairy cattle
30 dairy heifers
1 bull
96 hogs
100 sheep

1,300 chickens
8 sows
an acreage of wheat sufficient to yield 2,500 bushels of wheat for sale each year.

"Most of the soil is Fox sandy loam and is inclined to be rather droughty. The legumes and grasses suggested are adding to the organic content of the soil and our problem is being minimized.

"We find that we are experiencing no addition in operating costs; in fact, our per unit cost of production is decreasing."

CROP INCOME INCREASED.—"The half day required to work out this plan for my 60-acre farm in the spring of 1941 was the most profitable time I have ever put in on my farm," says George D. Hawkins, Hartsville, S. C. "I estimate conservatively that it has given me an increased income of at least \$1500 on soil conserving crops alone. That does not include the value of the soil that has been kept from washing and blowing away, nor the increased yield that has come from the soil-building practices which I am now following as a result of the plan. This \$1500 additional income was from new crops—at least new to me—which I would not have planted otherwise, and on land that was bringing low returns or none at all.

"I had one steep area of two and a half acres that was a real problem. I planted it to sericea lespedeza, and since 1942 it has produced 3 tons of hay and 3,000 pounds of seed worth \$700. Another field of 3 acres of sand was planted to kudzu and yielded 12 tons of hay worth \$400. 1 acre of washed-away land was planted to lespedeza bicolor, which has brought me \$75 from seed. Still another 3 acres, which was so completely washed away that I had "turned it out," was planted to kudzu. This land was so worn out that the kudzu has just now, after 5 years, developed to where it will furnish some grazing or hay. This land had completely stopped producing, so anything I get from it is profit.

"Blue lupine, one of the new crops in this section, is turning out mighty well for me. I got interested in this crop in 1944, when the Pee Dee Soil Conservation District gave me enough seed to plant two acres. I had bad luck with it that year but in the fall of 1945 I bought enough seed for 4 acres and planted it in October, after innoculating it thoroughly. I plowed under two acres for green manure and left the other 2 to produce seed.

"By terraces, contour cultivation, and rotations containing lots of soil building crops—practices included in the plan—the amount of cotton I have produced on the same acreage has increased 1250 pounds of lint per year, worth approximately \$400. My tobacco yield has increased 1800 pounds a year, amounting to \$700.

"Improved drainage on a 6-acre bottom increased its yield of oats and corn by at least 20 percent.

TEN PERCENT INCREASE PER YEAR.—"I have been pruning in this orchard for the past several weeks and have been cutting off new wood that actually runs as high

DISTRICT FARMERS BUILD SOIL AND INCOME

as 6 feet," says W. P. Leavitt, Placerville, Calif., in speaking about the results he has obtained from a permanent cover crop established 4 years ago in his orchard that has some grades as high as 33 percent. "The production of this block has been increased about 10 percent each year since we put the cover in and, even with a heavy crop last year, the bud set is again 100 percent. We have, of course, used a lot of fertilizer on the entire place. However, the present excellent condition of this orchard is due entirely to the benefits of the permanent cover crop. We flood irrigate, there has been no erosion, and the condition of the soil and trees is improving as each day passes.

"The production in 1943, from this six-acre orchard, was 1,116 lugs of pears. In 1944, it was 1404 lugs, and in 1945, it was 1,227 lugs. The drop in production in 1945 was due to a heavy infestation of pear blight. In 1946, I had 1,553 lugs on this acreage, and from the set of pear buds, indications are that there will be a very heavy crop next year. In addition, I made two cuttings of approximately 7 tons of hay from the permanent cover crop, and have been able to pasture from 2 to 7 head of stock on the area after the crop has been harvested."

GOOD ENGINEERING SAVED SITUATION.—"Our five farms lie in a dish-shaped basin," says Herman Lovengen, Arlington, Wash., in talking about "licking a common drainage problem of mine and my neighbors."

"Although our soil is very good, we were held back in our farming operations as there was not a suitable drain leading from the basin and the winter rains made a lake on parts of our farms.

"All of us got together with your engineers and we asked their advice. Of course several months went by before we could all agree on how to do the job. In the meantime the Soil Conservation Service men helped us draw up right-of-way easements to run with the land and we had them signed, notarized and recorded. Part of our trouble had been lack of right-of-way, so we appreciated the help in getting the easements ready.

"When at last we were ready to dig our ditch we struck trouble. The engineers specified an 18-inch concrete tile line 600 feet long to run from the basin through high ground, with a 14-foot cut to Portage Creek, which was our outlet. Some of us didn't believe such large tile was necessary and wanted to install 12-inch tile. The engineers refused to give in and insisted on 18-inch tile. They put up a good argument and we finally did the job as they had planned it.

"We finished the system in September. In October the Stillaguamish River went on a rampage with the highest water we had ever seen in the Valley. It overflowed the Valley and filled our basin so that we had a 65-acre lake covering parts of our 5 farms. We realized then that if the engineers had not insisted on the large tile, our winter seedlings would have been lost before the water drained away.

"My winter cover crop is now a bright green and 4 inches high. It would have been lost without the drainage job. The difference in production in my cannery pea crop last year would almost have paid for my share of the cost of the new drainage system, if it had been put in a year earlier."

DID ALL WORK HIMSELF.—"For the past 8 years I have been cooperating in the soil-conservation work in this district," reports J. C. Buford, Prescott, Ark., who operates a 145-acre farm.

"When we bought this farm in 1936 it was run down and in mighty bad shape. The gullies were bad, fences down, and much of the land had been left out to grow up in weeds and brush.

"We made our first crop on the place in 1937. We made 3 bales of cotton on 23 acres. Corn turned out about 8 to 10 bushels per acre. The pasture didn't furnish enough grass for our 4 cows and calves. The next year we signed up with the soil conservation work. . . . We worked out a plan on what needed to be done. Since then they have helped me get this plan carried out. We terraced all of the cultivated land, amounting to about 4 miles of terraces. Most of this was done with 6 mules hitched to a grader. Some of the gullies were so deep that the grader would almost turn over in them; now you can't tell where the gullies were.

"The pasture was contoured and set to bermuda and seeded with lespedeza and clover. I planted 16 acres of lespedeza and 2 acres of sericea for hay. I began planting vetch and winter peas, and laid off my rows with the terraces instead of up and down the hill. Now I make about 375 pounds of lint cotton per acre and 25 to 30 bushels corn per acre. Last year I made 7 bales on 9 acres and some of the bales weighed over 600 pounds. I make on the average 1,000 bales of lespedeza hay and last year cut 102 bales of sericea on 2 acres.

"My pasture now carries 25 to 30 head of stock from April through November and they go through the winter in good shape with only a little hay and no grain. I have noticed the water stands from 10 days to 2 weeks longer where the pasture is contoured.

"When we started on this place we had to buy all our hay and part of our corn. Now we have hay to sell and plenty of corn.

"I started this work back when money was scarce, and have done all the work myself except for part of the terracing. We have built a new house and barn, have electricity and a water system. It takes work but I know from experience that it can be done and that it pays."

TECHNICAL ASSISTANCE LOWERS COST.—"I am a farmer and have three farms under agreement with the Yellowstone Soil Conservation District," writes Gus Steinmann, Ashton, Idaho.

"Land leveling has been a part of the program outlined in my plans. The leveling that has been done on parts of my farms has increased the value of the farm by at least 10 percent to 15 percent. In addition to that it has made it possible to increase yields, and the quality of the potatoes especially, by at least 25 percent. Besides all of this, I have been able to handle my farms with lower labor costs. If it hadn't been for the technical assistance supplied by the Soil Conservation Service most of this work would never have been done.

"This coming year I am renting two of my farms to two separate farmers. Each of my renters have agreed to operate the farm as agreed on in the conservation and land-use management plan and this plan will automatically require the tenant to farm in such a way that the farm will not be run down."

EVERY FARM NEEDS COMPLETE PLAN.—"I am using every acre according to its proper use," says Willie Kouba, Yukon, Okla.

"My conservation work has increased the value of my farm at least \$1600. In fact, if I hadn't fixed my place up, part of it couldn't be farmed today.

"When I bought my farm there wasn't any pasture. The fields were washing bad. Part of it was washing so I couldn't farm it with a tractor. . . .

"I think the plan I have taken care of and improved my land has really paid me. Every farm should have a complete conservation plan so we can save the land for our children."

